

EXHIBIT 37

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF RHODE ISLAND**

STATE OF NEW YORK, et al.,

Plaintiffs,

v.

ROBERT F. KENNEDY, JR., in his official capacity as SECRETARY OF THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, et al.,

Defendants.

Case No. 1:25-cv-00196-MRD-PAS

DECLARATION OF MICHELLE DAVIS

I, Michelle Davis, declare under the penalty of perjury pursuant to 28 U.S.C. § 1746 that the foregoing is true and correct:

1. I am the Deputy Commissioner of the Office of Public Health (“OPH”), within the New York State Department of Health (“DOH”). I am familiar with the information in the statements set forth below either through personal knowledge, in consultation with DOH staff, or from documents that have been provided to and reviewed by me.

2. I submit this Declaration in support of the States’ Motion for a Preliminary Injunction.

Professional Background

3. I am the Deputy Commissioner at the OPH, within the DOH. I have served in this position since April 10, 2025. I have over thirty (30) years of public health experience serving at the local, county, state and territorial levels. I have held five (5) executive public health positions including my current position. They include: Deputy Health Commissioner for Policy and

Planning for the City of Philadelphia, Deputy Secretary for Health for Policy and Planning for the Commonwealth of Pennsylvania, Senior Executive Service within the U.S. Department of Health and Human Services (“HHS”) for the Office of the Secretary (CEO), and Health Commissioner (CEO) for the U.S. Virgin Islands. I have worked in and managed across a broad portfolio of public health areas including those outlined below for the NYS Office of Public Health. Within HHS I spent ten (10) years with the Centers for Disease Control and Prevention (“CDC”) as an epidemiologist and statistician developing surveys, analyzing data and training individuals how to collect and analyze data for program development and management. The CDC also assigned me to serve as the Director of Maternal and Child Health within one of our nations’ health departments. As the Health Commissioner of the U.S. Virgin Islands, I oversaw most of the same programs that are conducted by the DOH. I have undergraduate training in biology, psychology and education. Utilizing this education, I have worked as a laboratory microbiologist and a science teacher. With my graduate training in Epidemiology, Statistics and Health Policy, I have conducted research, written and published journal articles, and developed policy guidance at the federal level in the areas of Sickle Cell Disease, Language Access, Performance Measures and Data utilization among other areas.

4. DOH’s mission is to protect and promote health and well-being for all, building on a foundation of health equity. The OPH is responsible for a broad portfolio of essential public health activities in New York State, such as communicable disease control, immunizations, family health, chronic disease prevention, local public health practice, nutrition programs, drinking water safety, injury and violence prevention, and environmental health and food safety. The OPH oversees different centers and divisions, including the DOH’s Center for Community Health (“CCH”). Within the CCH, the Division of Chronic Disease Prevention implements

evidence-based and innovative public health strategies to support New Yorkers to live healthier lives by reducing the incidence and burden of many of the leading causes of death and disability, including heart disease, stroke, cancer, obesity, diabetes, and asthma, and their associated risk factors, including tobacco use, poor nutrition, and lack of physical activity.

5. The DOH's Bureau of Tobacco Control resides within the Division of Chronic Disease Prevention and has a mission to reduce tobacco-related illness, disability and death and to alleviate the social and economic burden caused by tobacco use in New York State. Since 2000, the Bureau of Tobacco Control has administered the State's comprehensive Tobacco Control Program to prevent tobacco use initiation, reduce tobacco use among adults, eliminate exposure to secondhand smoke, and advance health equity.

6. The Bureau of Tobacco Control operates through a comprehensive, integrated, evidence-based, CDC-recommended framework of health communications, cessation-focused health systems change, local and statewide policy initiatives, and is also assessed through a state-mandated independent evaluation. The program uses health communications and mass media to conduct widespread public awareness campaigns to inform the community about the dangers of tobacco use and the benefits of quitting. The health systems change efforts aim to enhance the delivery of evidence-based tobacco cessation treatment, particularly for underserved populations, through initiatives such as integrating tobacco use screening in electronic health records, training providers, and expanding cessation benefits. Programs like the Health Systems for a Tobacco-Free NY and the New York State Smokers' Quitline provide resources and support to both individuals and healthcare providers to facilitate successful quit attempts. Through the Advancing Tobacco-Free Communities Program, the Bureau funds a network of grantees across New York State to implement community engagement and youth action strategies aimed at

creating tobacco-free environments. Their initiatives focus on policy changes to reduce tobacco marketing, promote smoke-free outdoor spaces and multiunit housing, and address tobacco use disparities among specific populations.

Office on Smoking and Health (“OSH”)

7. OSH was the lead federal agency for comprehensive tobacco prevention and control and played a critical role in preventing youth tobacco use, which includes smoking, vaping, and other nicotine products, and helping adults to quit smoking. Cigarette smoking is the leading cause of preventable disease, disability, and death in the United States. OSH worked to prevent and reduce cigarette smoking by collecting, studying, and sharing information on cigarette smoking and its effects on health, as mandated by Congress. 15 U.S.C. § 1341 (“Smoking, research, education and information”).

8. OSH was administered by the National Center for Chronic Disease Prevention and Health Promotion (“NCCDPHP”), within the CDC of the HHS.

9. OSH managed a tobacco use data portal which provided access to the latest tobacco prevention and control data, graphs, and maps, as well as the State Tobacco Activities Tracking and Evaluation (“STATE”) System, which presented data on traditional Medicaid coverage of tobacco cessation treatments in fifty (50) U.S. States and the District of Columbia. This dataset was used by Plaintiff States to assess tobacco cessation policies and served as a national clearinghouse of information for the public.

10. OSH also managed annual submissions of cigarette and smokeless tobacco ingredient reports from manufacturers, packagers, and importers. OSH also monitored tobacco use trends and health impacts in part to inform FDA regulations and enforcement.

11. Further, staff at OSH establishes and maintains specifications for data systems needed to track measures of tobacco use for all fifty (50) states, including New York. They maintain the case definitions of measures essential to monitoring progress in tobacco control, cigarette smoking, use of other tobacco products, vaping, and quit attempts. Public health surveillance and epidemiology rely on stable data systems and these standard case definitions. The loss of experts responsible for maintaining these central data systems and technical measure specifications at HHS severely impaired New York State's tobacco control efforts; without these centralized systems; the consistency or effective collaboration amongst the fifty (50) states and US territories involved in tobacco control will be critically impacted.

12. OSH's national surveillance systems provided reliable, consistent, and cost-effective data collection that New York State used to evaluate its work and monitor progress in tobacco use prevention. OSH played an important role in surveillance and surveys, including the state-based Behavioral Risk Factor Surveillance System, National Health and Nutrition Examination Survey, and the National Youth Tobacco Survey ("NYTS"). NYTS collected data on tobacco use by high school and middle school students, including which products they were using, how often they use them, and how youth access them. The NYTS informs question development of state-level Youth Tobacco Surveys and serves as a comparison to understand state trends in context. The NYTS findings help inform the broader conversation about New York's and other states' tobacco-related outcomes among decision makers, the media and public health practitioners; and help to fill in the gaps in data for items that states do not have in their YTS. OSH additionally published state-level data on tobacco use prevention and cessation in the STATE. The STATE system helps New York State to facilitate data analysis and evaluation.

13. OSH educates the public about the harms of tobacco use, including media campaigns such as Tips from Former Smokers (“Tips Campaign”) and publications derived from the Publication Catalog and Ordering System. The Tips Campaign ads, which were placed on television, radio, and billboards, encouraged people who smoke to quit by featuring real people with serious health conditions caused by smoking and secondhand smoke exposure. A CDC study of the Tips Campaign documented a significant positive impact on Americans’ health. CDC estimated that during 2012-2018, over 16.4 million smokers attempted to quit and approximately one million successfully quit because of the Tips Campaign. Smokers who saw Tips Campaign videos reported greater intentions to quit smoking, and former smokers with higher exposure to the ads were associated with lower odds of relapse. The Tips Campaign was credited with helping to prevent early deaths and save precious government resources. The successful Tips Campaign continued to run from 2012 through 2024. It is estimated that a quarter of people that called quitlines in response to the Tips campaign have a disability or other chronic health condition. The loss of this campaign eliminates a critical tool that informed and assisted these groups with smoking cessation, the same groups that the DOH seeks to help through its aligned, evidence-based public awareness campaigns which were intentionally designed to complement federal efforts—coordination that is now disrupted by the loss of the Tips campaign.

See Exhibits A and B.

14. OSH scientists published high-quality reports on tobacco use trends that New York and other states utilized to prioritize interventions, monitor progress, and reduce disparities. For example, OSH’s Best Practices for Comprehensive Tobacco Control Program Guide advises states on how to develop, implement, and fund an evidence-based tobacco prevention and control program. OSH likewise dedicated its publications and resources to the “Publication Catalog and

Ordering System” where state agencies and other users could access campaign materials and Surgeon General’s reports. Finally, CDC’s OSH disseminates several fact sheets and publications which serve as foundational evidence-based guides for tobacco control programs interventions and evaluations. These publications set the stage for talking about emerging products, shifting trends and key priorities.

15. OSH maintained the national network of tobacco cessation quitlines by supporting quitline services in fifty states, two U.S. territories, and Washington, D.C. Additionally, OSH funded the New York State quitline to deliver resources such as counseling and medications.

16. OSH also supported the National Quitline Data Warehouse (“NQDW”), a large repository that serves as a continuing national resource for data on the services, utilization, and success of 54 nationwide quitlines. New York State, amongst others, has been able to conduct robust studies of its Quitline’s reach and effectiveness because of the access it has to other state and national data via the NQDW. Without a primary, recognizable, and promoted program like the national quitline portal, (i.e., 1-800-QUIT-NOW), fewer people will be encouraged to quit or know where to get help. The Tips Campaign resulted in a sustained and dramatic increase of calls to quitlines. From 2012-2023, more than 2 million calls to the national tobacco quitline portal can be attributed to the Tips campaign. *See Exhibit C.* More than 1 million people have successfully quit because of the Tips campaign. *See Exhibit B.*

17. OSH also provided millions in funding to the National and State Tobacco Control Program. Participating states used OSH funds to prevent kids from using tobacco, reduce secondhand smoke exposure, help people quit smoking, and address disparities in tobacco use.

18. OSH is largely administered at the federal level by HHS employees working out of HHS Regional Offices.

19. I am providing this declaration to explain the impacts on New York State and DOH of the changes to OSH, including a reduction in staffing, since April 1, 2025. These changes have created a situation whereby the DOH must alter its practices and procedures; fill critical gaps in technical assistance, surveillance, and communications support; adapt program strategies without essential federal guidance; manage uncertainty around future grant funding; and delay implementation of key evidence-based tobacco control interventions.

Center for Tobacco Products (CTP)

20. Per 21 U.S.C. § 387a(e), the Food and Drug Administration (“FDA”) of HHS was obligated to create the CTP to administer the Family Smoking Prevention and Tobacco Control Act.

21. In the past CTP has overseen the implementation of the Family Smoking Prevention and Tobacco Control Act on behalf of the FDA by setting performance standards for tobacco products, reviewing premarket applications for new and modified risk tobacco products, requiring new warning labels, and establishing and enforcing advertising and promotion restrictions.

22. Among other duties, CTP conducts compliance checks on vendors and retailers to ensure that tobacco products are not sold to those under the age of twenty-one, reviews premarket applications for new tobacco products before they can be marketed in the United States, enforces advertising and promotion restrictions, oversees warning labels on tobacco and nicotine products, and educates the public about the risks of tobacco use including the dangers of e-cigarettes and other tobacco products. A critical part of FDA’s public health mission is educating youth about the dangers of e-cigarette use and since 2018, CTP has prioritized its public education efforts to further reduce e-cigarette use among youth. The CTP’s “Real Cost

Campaign” is a youth-specific national e-cigarette and cigarette prevention media campaign focused on educating youth about the negative health effects and risks of vaping and smoking. The campaign was found to have prevented an estimated 444,252 American youth (aged 11 to 17 at study recruitment) from starting to use e-cigarettes between 2023 and 2024. *See Exhibit D.*

Changes in OSH and CTP activity since April 1, 2025

23. Prior to April 1, 2025, the DOH regularly relied on OSH staff for many aspects of the day-to-day operation of the Bureau of Tobacco Control. However, since April 1, DOH has seen significant cutbacks to the operations of OSH and CTP programs.

24. Specifically, our state’s primary point of contact at OSH, for the Project Officer or Public Health Advisor, is no longer available to be contacted. We have not been able to receive answers or guidance regarding guidance, assistance, and administrative oversight regarding the federal cooperative agreement. *See a sample CDC Cooperative Agreement attached hereto as Exhibit E*, which describes CDC’s expected “substantial programmatic involvement”.

25. OSH employees assigned to the DOH have received RIF notices from HHS including the federal project officer (Public Health Advisor) assigned to New York and staff from the health communication branch, the policy team, and the epidemiology branch and evaluation team. These employees responsibilities included providing training, technical assistance, and oversight regarding: revision or submission of annual work plans; advancing program activities to achieve project outcomes; subject matter expertise and resources; development of annual evaluation plans that align with CDC evaluation activities; annual evaluation and performance measurement plan; policy, systems, and environmental strategies for tobacco control, including tobacco use and dependence treatment strategies and activities; best

practices for tobacco prevention and control; evidence-based policy, systems, and environmental strategies and activities for tobacco control through workshops, conferences, training, electronic and verbal communication; and development and maintenance of partnerships with federal and non-federal organizations to assist in tobacco control and maintain a national infrastructure that complements the state infrastructure

26. The DOH no longer has access to OSH education ads through the Media Campaign Resource Center (“MCRC”). The MCRC is a clearinghouse for tobacco use, prevention, and cessation educational campaign materials created by national and international tobacco control programs. It includes hundreds of videos, radio, print, outdoor (billboard), digital ads, and social media materials. The MCRC managed all logistics of providing the appropriate license for tobacco control programs to use its creative materials by managing licensing, talent costs, edits, and more. For over 20 years, New York has relied on the MCRC to access creative materials for its annual mass media campaigns. Presently, the MCRC’s website displays a banner that says: “We are currently unable to process orders at this time.” *See Exhibit F.*

27. Without staff at CDC’s OSH, New York State has lost access to the technical advisors at CDC who provide guidance and feedback regarding state program evaluation and performance measurement plans, as well as who maintain and update key surveillance systems. Without key staff at CDC’s OSH, updates to the National Youth Tobacco Survey, the STATE, and resources for NY’s tobacco quitline are unlikely to occur, significantly hampering NY’s efforts to effectively evaluate their tobacco prevention and control programming.

28. The Department of Health has lost access to updated OSH data and guidance on tobacco use trends, including the STATE system, the National YTS and Best Practices for Comprehensive Tobacco Control Program Guide. While these resources are still available

online, they will not be updated moving forward, hampering DOH's ability to stay current on vital information on tobacco use trends.

29. The DOH has also lost access to materials that educate on the dangers of smoking and tobacco products and means for quitting, including the Tips from Former Smokers campaign and publications derived.

30. Additionally, the DOH has lost access to the national network of tobacco cessation quitlines. OSH was responsible for providing technical assistance upon request, on the submission of data to the NQDW; it was responsible for providing technical assistance and training to states related to data collection and reporting of, aggregate data at the state-level and national level, and reporting aggregate state-level data in the STATE System and other publications, e.g., State Tobacco Control Highlights.

31. Our state tobacco laws and regulations depend on FDA review and approval of new tobacco product applications. If those applications are not properly processed, our state's ability to keep dangerous tobacco products off the shelves will be impacted.

Effect on State's Tobacco Program

32. The DOH has been significantly affected by the changes to OSH and CTP described above.

33. In the past, DOH relied on OSH and CTP for training, technical assistance, surveillance data, guidance documents, compliance checks, and other support previously provided by OSH and CTP. New York has lost access to vital technical assistance, research, and surveillance infrastructure that have supported effective tobacco control programs at both state and local levels for decades. For example, monthly National Tobacco Control Program, Media

Network, and periodic Evaluation Technical Assistance webinars to provide updates from subject matter experts about relevant tobacco-related topics and issues have been eliminated.

34. Deprecation of these two subagencies will have an effect on New York State's ability to protect its citizens, especially its youth, from the dangers of smoking and tobacco products. Inadequate or inaccurate surveillance data of tobacco use will harm DOH's ability to efficiently and effectively deploy its tobacco control tools and resources. Fewer compliance checks by the CTP will lead to more illegal sales of tobacco products, exposing the youth of New York State to a risk of becoming addicted to nicotine products and suffering known health harms. We have also seen delays in funding and slower response time, or in some cases no response, to inquiries, leaving DOH in peril.

35. These changes at OSH and CTP risk significant harm to young children and their families in New York State, reversing years of progress in public health. These reductions threaten to exacerbate the epidemic of tobacco-related chronic diseases, which significantly impact families by increasing healthcare costs and reducing quality of life. Ultimately, the consequences of these cuts could lead to higher rates of disability and premature death, disproportionately affecting vulnerable populations and children and undermining their health and well-being. New York State continues to face considerable health and economic burdens associated with smoking (28,000 smoking-attributable deaths and \$7.7 billion in smoking-attributable health care expenditures in 2019).

Michelle S. Davis
MICHELLE DAVIS

Date: May 7, 2025

Exhibit A



PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
Preventing Chronic Disease

Association Between the Tips From Former Smokers Campaign and Smoking Cessation Among Adults, United States, 2012–2018

CME ACTIVITY — Volume 17 — August 27, 2020



Rebecca Murphy-Hoefer, PhD, MPH¹; Kevin C. Davis, MA²; Brian A. King, PhD, MPH¹; Diane Beistle, BA¹; Robert Rodes, MS, MBA¹; Corinne Graffunder, DrPH, MPH¹ (VIEW AUTHOR AFFILIATIONS)

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MEDSCAPE CME

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Learning Objectives

Upon completion of this activity, participants will be able to:

1. Distinguish the ratio of persons who die from smoking-related illness to persons living with smoking-related illness
2. Assess the efficacy of the *Tips From Former Smokers*® program
3. Analyze characteristics associated with higher rates of attempts to quit smoking

EDITOR

Camille Martin, RD

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Preventing Chronic Disease

Disclosure: Camille Martin, RD, has disclosed no relevant financial relationships.

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Disclosure: Charles P. Vega, MD, has disclosed the following relevant financial relationships:

Served as an advisor or consultant for: Johnson & Johnson Pharmaceutical Research & Development, LLC; GlaxoSmithKline

Served as a speaker or a member of a speakers bureau for: Genentech, GlaxoSmithKline

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Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to 1.0 MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABIM MOC credit.

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Atlanta, Georgia

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PEER REVIEWED

Summary

What is already known on this topic?

The Centers for Disease Control and Prevention's *Tips From Former Smokers (Tips)* campaign is associated with increased quit attempts among specific populations of people who smoke, including African Americans, pregnant women, people with mental health conditions, and those with lower educational attainment. The campaign increases calls to smoker quitlines and visits to the *Tips* website and other cessation resources.

What is added by this report?

During 2012–2018, the *Tips* campaign was associated with an estimated 16.4 million quit attempts and more than 1 million sustained quits among US adults.

What are the implications for public health practice?

Mass media campaigns, such as the *Tips* campaign, can increase smoking quit attempts and sustained quits as part of a comprehensive approach to reducing smoking-related disease and premature death in the United States.

In 2012, the Centers for Disease Control and Prevention (CDC) launched the national *Tips From Former Smokers (Tips)* campaign to encourage people who smoke to quit by showing real-life health consequences of tobacco use and promoting evidence-based resources for quitting. To assess the campaign's impact on quit attempts and sustained-quit estimates (ie, quits lasting ≥6 mos), CDC analyzed data from a nationally representative longitudinal survey of US adults who smoke cigarettes, aged 18 years or older in 2012–2018. The *Tips* campaign was associated with an estimated 16.4 million quit attempts and 1,005,419 sustained quits. Continued implementation of cessation campaigns, including the *Tips* campaign, could accelerate progress toward reducing rates of smoking-related diseases and death.

Top

Objective

Cigarette smoking remains the leading cause of preventable death in the United States (1). For every person who dies because of cigarette smoking, at least 30 people live with a serious smoking-related illness (1). Evidence-based media campaigns can increase tobacco cessation, increase use of cessation resources such as quitlines, and change tobacco-related social norms (2,3). This study aimed to determine the 7-year impact of the *Tips From Former Smokers (Tips)* campaign on population-level smoking cessation by measuring cumulative campaign-associated quit attempts and sustained quit estimates, accounting for smoking relapse.

Top

Methods

The Centers for Disease Control and Prevention (CDC) collected data from the KnowledgePanel (www.knpanel.com) (KP), an ongoing national online survey of adults in the United States. KP recruitment is conducted through random sampling of US household mailing addresses, and respondents are followed over time, allowing for participation in multiple survey waves. Current cigarette smokers are defined as people who smoked at least 100 cigarettes in their lifetime and who smoked every day or some days at the time of survey. We included data from the 2012–2018 waves of this survey (N = 35,275 observations on 9,653 unique current smokers) to assess the impact of *Tips* campaign exposure on quit attempts and sustained quit estimates.

We used a geography-based quasi-experimental design that relates variation in *Tips* campaign exposure across media markets and time to individual quit attempt behaviors across time. Quit attempts in the past 3 months among current cigarette smokers were assessed by asking, "During the past 3 months, how many times have you stopped smoking for 1 day or longer because you were trying to quit smoking cigarettes for good?" We created an indicator variable for having made at least 1 quit attempt in the past 3 months. *Tips* campaign exposure was determined by calculating past 3-month cumulative campaign television gross ratings points (GRPs, a measure of market-level campaign dose) and merging them with individual survey responses based on respondents' media market of residence and survey date. We used logistic regression to relate self-reported quit attempts in the past 3 months to GRPs (3). The model controlled for age, sex, race/ethnicity, education level, annual household income, presence of chronic physical or mental health conditions, tobacco surveys taken in the past year, presence of children in the household, presence of others who smoke cigarettes in the household, cigarette smoking prevalence in the respondent's television market, state fixed effects, and a linear time trend to control for secular trends over time. Model results were used to estimate the predicted quit attempt rate differential between observed doses of zero GRPs (ie, no campaign) and the average quarterly *Tips* campaign dose of 1,200 GRPs from 2012 to 2018 (ie, matching CDC recommendations on GRP dose) (2). The quit attempt rate differential was then multiplied by the yearly adult smoker population to create an initial estimate of total campaign-attributable quit attempts for each year during 2012–2018. Finally, the year-specific projections of campaign-attributable quit attempts were adjusted to account for the number of quarters the campaign was on the air in each year.

Sustained quit estimates were calculated using the estimated proportion of campaign-attributable quit attempters who remained abstinent from smoking at 6-month follow-up. On the basis of survey timing and resources, we were able to estimate sustained quitting during 4 of the 7 years of data in the analysis. Sustained quit rates averaged 7.2% in the available data. Because our sample was not designed to measure longer-term relapse, we used literature-based estimates (4,5) to calculate approximate relapse (15.3%) for 1 year after the initial 6 months of cigarette abstinence.

The *Tips* campaign was correlated with increased odds of a quit attempt in the past 3 months (odds ratio = 1.19; 95% confidence interval [CI], 1.11–1.27) (Table 1). An average of 1,200 GRPs per quarter translated into a 3.9 (95% CI, 3.4–4.3) percentage point increase in quit attempts per quarter during 2012–2018. Past 3-month quit attempt rates ranged from 32.5% in the absence of the campaign (0 GRPs) to 39.7% (4,000 GRPs) during the 2012–2018 campaigns (4,000 GRPs). Approximately 16.4 million quit attempts and an estimated 1,005,419 sustained quits lasting at least 1 year (95% CI, 876,519–1,108,539) were associated with *Tips* during 2012–2018 (Table 2). Sustained quit estimates ranged from 103,729 in 2012 to 188,577 in 2017.

Discussion

During 2012–2018, the *Tips* campaign contributed to 16.4 million quit attempts and more than 1 million estimated sustained quits. These results are consistent with previous evaluations of the *Tips* campaign that have shown significant campaign effects on quit attempts and sustained quit estimates (eg, 1.6 million and 100,000 in 2012 (6); 1.83 million and 104,000 in 2014 (7); and 9 million and 522,000 in 2012–2015 (8), respectively). Additionally, the impact of *Tips* on quit attempts was recently supported with a study using data from the Behavioral Risk Factor Surveillance System (9).

Prior studies have also reported the impact of the *Tips* campaign on quit attempts among specific populations, including African Americans, pregnant women, people with mental health conditions, and those with less educational attainment (10). The campaign has also been associated with cessation-related outcomes, such as increased calls to 1-800-QUIT-NOW (6) and 1-855-DEJETO-YA (a national portal that routes Spanish-speaking callers to Spanish-language services from callers' state quitlines) (11), and visits to the *Tips* campaign website and other cessation resources (10).

These findings are subject to at least 2 limitations. The analysis used an average campaign effect estimated from 2012 to 2018. Although this effect may vary across years, research does not indicate significant variation in campaign effects over time (3). Another limitation is that we measured only television exposure and not other campaign channels such as radio, digital media, or billboards. Therefore, the estimated campaign effects may be conservative if total campaign exposure was underestimated.

In summary, the *Tips* campaign led to an estimated 16.4 million quit attempts and more than 1 million estimated sustained quits during 2012–2018, demonstrating that public health campaigns can be effective when they are based on scientific evidence and are of sufficient intensity and duration (2).

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This study was funded by CDC. No copyrighted material, surveys, instruments, or tools were used.

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Tables



Table 1. Association Between Making a Quit Attempt in the Past 3 Months and Select Characteristics, *Tips From Former Smokers* Campaign, United States, 2012–2018

Model Covariate ^a	OR (95% CI)
Total campaign mass media market GRPs, past 3 months (square root functional form)	1.19 (1.11–1.27)
Age	0.98 (0.98–0.99)
Sex	
Female	1 [Reference]
Male	0.87 (0.78–0.97)
Race/ethnicity	
White	1 [Reference]
Black	1.55 (1.29–1.86)
Hispanic	1.90 (1.59–2.26)
Other	1.37 (1.08–1.75)
Education	
Less than high school	1 [Reference]
High school diploma	1.08 (0.91–1.29)
Some college	1.28 (1.08–1.52)
Bachelor's degree or higher	1.69 (1.38–2.06)
Annual household income, \$	
<20,000	1 [Reference]
20,000–49,999	0.88 (0.78–1.00)
50,000–99,999	0.97 (0.84–1.12)
≥100,000	0.80 (0.67–0.97)
Chronic condition	1 [Reference]

Model Covariate ^a	OR (95% CI)
Physical	1.27 (1.14–1.42)
Mental	1.08 (0.97–1.20)
Tobacco surveys past year	0.93 (0.90–0.96)
Child in household	1.25 (1.12–1.40)
Smoker in household	0.56 (0.51–0.62)
Smoking prevalence (mass media market level)	0.99 (0.96–1.02)
Linear time	0.997 (0.99–1.00)
No. of model observations	35,275

Abbreviations: CI, confidence interval; GRPs, gross rating points; OR, odds ratio.

^a Model includes covariates for state fixed effects (not shown).

Table 2. Estimated Campaign Cumulative Impact on Sustained Quits, *Tips From Former Smokers* Campaign, United States, 2012–2018

Campaign Year	Dates On Air	Number of Quarters Campaign on Air	Estimated Campaign-Associated Quit Attempts (n = 16,440,928)	Estimated Campaign-Associated Sustained Quits ^a (n = 1,005,419)
2012	March 19–June 19	1.00	1,696,214	103,729
2013	March 4–June 17	1.16	1,964,772	120,152
2014	February 3–April 6; July 7–September 7	1.50	2,436,389	148,994
2015	March 30–August 16	1.49	2,198,523	134,447
2016	January 25–June 12	1.53	2,385,108	145,858
2017	January 9–July 30	2.22	3,083,677	188,577
2018	April 23–October 14	1.92	2,676,245	163,662

^a Assuming a 15.3% relapse rate.

Post-Test Information

To obtain credit, you should first read the journal article. After reading the article, you should be able to answer the following, related, multiple-choice questions. To complete the questions (with a minimum 75% passing score) and earn continuing medical education (CME) credit, please go to <http://www.medscape.org/journal/pcd>. Credit cannot be obtained for tests completed on paper, although you may use the worksheet below to keep a record of your answers.

You must be a registered user on <http://www.medscape.org>. If you are not registered on <http://www.medscape.org>, please click on the “Register” link on the right hand side of the website.

Only one answer is correct for each question. Once you successfully answer all post-test questions, you will be able to view and/or print your certificate. For questions regarding this activity, contact the accredited provider, CME@medscape.net. For technical assistance, contact CME@medscape.net. American Medical Association's Physician's Recognition Award (AMA PRA) credits are accepted in the US as evidence of participation in CME activities. For further information on this award, please go to <https://www.ama-assn.org>. The AMA has determined that physicians not licensed in the US who participate in this CME activity are eligible for AMA PRA Category 1 Credits™. Through agreements that the AMA has made with agencies in some countries, AMA PRA credit may be acceptable as evidence of participation in CME activities. If you are not licensed in the US, please complete the questions online, print the AMA PRA CME credit certificate, and present it to your national medical association for review.

Post-Test Questions

Study Title: Association Between the *Tips From Former Smokers* Campaign and Smoking Cessation Among Adults, United States, 2012–2018

CME Questions

1. You are seeing a 35-year-old man who has smoked approximately one-half of a pack per day of cigarettes since he was 20 years old. He has no complaints or chronic illnesses and needs a physical examination to start work as a commercial truck driver. He says he is not interested in smoking cessation now because "I'm not dying anytime soon." What can you quote him regarding the ratio of number of deaths related to cigarette smoking to number of individuals living with smoking-related illness?

- A. 1:4
- B. 1:12
- C. 1:30
- D. 1:120

2. You tell this patient about the *Tips From Former Smokers*® campaign to provide more information and motivation to quit smoking. In the current study, which of the following outcomes was associated with the *Tips From Former Smokers* campaign?

- A. Neither quit attempts nor sustained smoking cessation
- B. Quit attempts but not sustained smoking cessation
- C. Sustained smoking cessation but not quit attempts
- D. Both quit attempts and sustained smoking cessation

3. Which of the following other variables was associated with a higher rate of attempts to quit smoking in the current study?

- A. Black and Hispanic race/ethnicity
- B. Male sex
- C. Higher income
- D. Having another smoker in the household

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Last Reviewed: August 27, 2020

Was this page helpful?

Exhibit B



Tips Impact and Results

Tips From Former Smokers®

The *Tips From Former Smokers®* (*Tips®*) campaign shows real people living with serious long-term health effects from smoking and secondhand smoke exposure. *Tips* also features compelling stories from family members who take care of loved ones affected by a smoking-related disease or disability.

To learn more about the background of the *Tips* campaign, visit the About the Campaign web page. Campaign outcomes are listed below.

Tips Campaign Impact

- From 2012–2018, CDC estimates that more than 16.4 million people who smoke have attempted to quit and approximately one million have successfully quit because of the *Tips* campaign.¹
- People who smoke who have seen *Tips* ads report greater intentions to quit within the next 30 days, and people who smoke who have seen the ads multiple times have even greater intentions to quit.²
- Higher levels of exposure to the *Tips* campaign were associated with lower odds of relapse to cigarette smoking.³
- During 2012–2018, CDC's *Tips From Former Smokers* campaign helped prevent an estimated 129,000 early deaths and helped save an estimated \$7.3 billion in smoking-related healthcare costs.⁴
- For every \$3,800 spent on the *Tips* campaign between 2012–2018, we prevented an early death. A cost-effectiveness study on the topic factored in smoking relapse, inflation, and advertising and evaluation costs.⁴
- In each campaign, there was an immediate, sustained and dramatic spike in calls to 1-800-QUIT-NOW, and in visits to the campaign website.
- The *Tips* campaign generated over two million additional calls to 1-800-QUIT-NOW during 2012–2023.⁵



Tips Publications and Evaluation Results

Find and filter articles about the *Tips* campaign by topic, publication date, and campaign year.

Search for articles

TIPS FROM
FORMER
SMOKERS®

More than
1 Million
people quit smoking because
of the #CDCTips campaign

Source: Preventing Chronic Disease



#CDCTips

TIPS FROM
FORMER
SMOKERS®

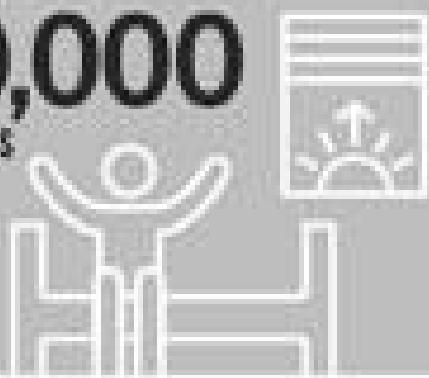
Impact of CDC's *Tips From Former Smokers* Campaign

From 2012 through 2018, the campaign was associated with:

ESTIMATED

129,000

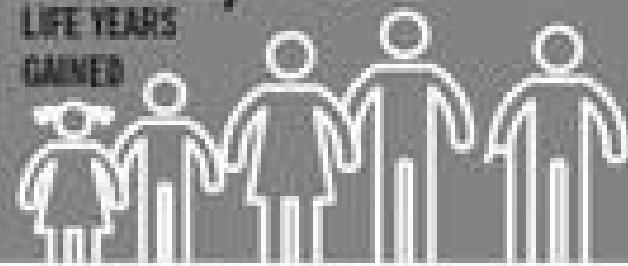
EARLY DEATHS
AVOIDED



ESTIMATED

804,000

LIFE YEARS
GAINED



Infographic [PDF – 433KB]

What People Are Saying About *Tips*

"These are the most effective antismoking DCAs I've ever seen."

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Last Reviewed: October 8, 2024

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Exhibit C



OXFORD

The Long-Term Impact of the *Tips From Former Smokers®* Campaign on Calls to 1-800-QUIT-NOW, 2012–2023

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Abstract

Introduction: There is substantial evidence that mass media campaigns increase calls to quitlines as well as smoking cessation. In 2012, the Centers for Disease Control and Prevention launched the first federally funded national tobacco education campaign, *Tips From Former Smokers®* (ie, *Tips*). From 2012 through 2023, *Tips* aired advertisements on television. To date, no studies have examined the long-term effect of a national smoking cessation campaign on quitline calls. This study examined the long-term impact of *Tips* television ads on calls to 1-800-QUIT-NOW from 2012 through 2023.

Methods: Exposure to the *Tips* campaign was measured using weekly gross rating points (GRPs) for television ads in each U.S. designated market area. We obtained data on calls to 1-800-QUIT-NOW from the National Cancer Institute and used linear regression to model calls to 1-800-QUIT-NOW, from 2012 through 2023, as a function of weekly media market-level GRPs for *Tips* television ads. Using the regression model results, we calculated predicted values of calls to 1-800-QUIT-NOW across observed GRP values to determine the total calls to 1-800-QUIT-NOW that were attributable to the *Tips* campaign during 2012–2023.

Results: *Tips* GRPs were positively and significantly associated with calls to 1-800-QUIT-NOW across all years ($b = 39.94$, $p < .001$). Based on this association, we estimate the *Tips* campaign generated nearly 2.1 million additional calls to 1-800-QUIT-NOW during 2012–2023.

Conclusions: Exposure to the *Tips* campaign has consistently and significantly increased calls to tobacco quitlines.

Implications: Quitlines provide evidence-based support to help people quit smoking. They have been shown to increase the likelihood of successfully quitting. Mass media campaigns have promoted quitlines, and quitline calls have increased significantly with media promotion. The long-term effect of campaigns—like the Centers for Disease Control and Prevention's *Tips From Former Smokers®* (ie, *Tips*)—on quitline calls has not been determined. From 2012 through 2023, exposure to the *Tips* campaign is estimated to have generated nearly 2.1 million additional calls to 1-800-QUIT-NOW. This study supports the continued use of mass media to promote quitlines.

Introduction

All 50 states, the District of Columbia, Guam, and Puerto Rico use telephone quitlines to provide support to people who want to quit using commercial tobacco products.^{1–9} Tobacco quitlines provide free evidence-based resources such as counseling, referrals to local programs, information, and self-help materials. Many quitlines also offer free medications such as nicotine replacement therapy as well as web- and text-based support.^{1–9} Substantial evidence has shown that telephone quitlines are effective at helping people who smoke make quit attempts and successfully quit.^{1,3–5,7,10–13} Quitlines are used by a variety of populations and are particularly helpful for people who may face financial or logistical barriers to accessing other evidence-based cessation services (eg, health insurance and transportation are not needed to use quitline services).^{1–8,11,14–22} Quitlines play an important role in addressing disparities in tobacco use cessation by reaching—and providing services to—populations disproportionately affected by tobacco use.^{1–8,11,14–22}

Telephone quitlines are a key part of comprehensive efforts to increase smoking cessation and are a recommended component of state tobacco control programs.^{4,5,10} The Centers for Disease Control and Prevention (CDC) provides dedicated funding for state quitlines.² Many states also provide additional funding to support their quitline.³ Since 2004, people in the United States have been able to access their state quitline through the National Network of Tobacco Cessation Quitlines national portal, 1-800-QUIT-NOW, which is operated and administered by the National Cancer Institute (NCI).^{1,2,4,5} During its first 15 years, from 2004 through 2019, 1-800-QUIT-NOW received more than 10 million calls.^{1,2}

A number of studies in the United States and elsewhere have demonstrated that mass media campaigns are effective at promoting calls to quitlines.^{4,11,12,15,20,23–28} In 2012, CDC launched the first federally funded national tobacco education campaign—*Tips From Former Smokers®* (ie, *Tips*)—to raise awareness of the negative health effects caused by smoking cigarettes, motivate people who smoke to quit, and encourage those who do not smoke to protect themselves and

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their families from exposure to secondhand smoke. The *Tips* campaign tells the personal stories of real people from many different backgrounds who are living with serious long-term health consequences from smoking and secondhand smoke exposure.^{29,30} Campaign advertisements are placed on television and radio, in print, and on digital platforms. Since 2012, the campaign has run multiple weeks every year, typically during spring and summer. The largest portion of the *Tips* media budget goes toward TV ads, which have aired nationally on both broadcast and cable channels. To encourage adults who smoke to seek assistance with quitting, *Tips* TV advertisements are typically tagged with a call to action directing people to 1-800-QUIT-NOW, which appears at the end of the ads. Early research showed that the initial *Tips* campaign in 2012 generated over 150 000 additional calls to 1-800-QUIT-NOW nationwide^{23–25} and significantly increased calls to 1-800-QUIT-NOW in almost every state.²⁶

Although these prior studies showed a positive impact of the *Tips* campaign on quitline calls, there has not been an assessment of the long-term effect of the campaign on quitline calls over multiple years. In this study, we estimate the long-term dose-response relationship between the *Tips* campaign and calls to 1-800-QUIT-NOW. To assess the effect of the campaign on quitline calls over time, we calculated the impact of *Tips* media on total calls to 1-800-QUIT-NOW from 2012 through 2023. To the best of our knowledge, this is the first study to examine the impact of a long-term national anti-smoking media campaign occurring over more than a decade on calls to telephone quitlines.

Materials and Methods

Data and Measures

The outcome variable was the weekly number of calls to 1-800-QUIT-NOW by media market. Data for all incoming calls to 1-800-QUIT-NOW from January 2, 2012, through December 31, 2023, for all 50 U.S. states and Washington, DC, were obtained from NCI. These data comprise records for each individual call received, not unique callers. Some state quitlines use numbers other than 1-800-QUIT-NOW as their primary or secondary number. Calls to these other quitline numbers are not included in this analysis, since those numbers were not promoted by *Tips* TV ads. Furthermore, calls to those numbers are not included in the NCI call volume data for

1-800-QUIT-NOW. The primary independent variable was *Tips* campaign exposure, measured by weekly gross rating points (GRPs) for television ads in each media market. GRPs measure the relative “dose” of advertising delivered to a given audience (eg, adults who smoke) in a given media market and time period. GRPs are defined as the product of reach (ie, the proportion of the audience exposed to a given ad) and frequency (ie, the number of times the audience is exposed to an ad) during a given time period.⁴

Weekly GRPs for *Tips* television ads in each media market were matched with weekly counts of calls to 1-800-QUIT-NOW from that media market. There are 210 Nielsen designated market areas (DMAs) that geographically define each U.S. television media market. Calls to 1-800-QUIT-NOW were matched to corresponding Nielsen DMAs by area code. For area codes geographically located entirely within a single DMA, all calls were assigned to that specific DMA. For area codes geographically located in multiple DMAs, the total number of calls from that area code were distributed across those DMAs

based on the proportion of the area code’s population located in each DMA. The final data used for this analysis included 8 617 439 total calls to 1-800-QUIT-NOW (100%) received from 2012 through 2023 in all 210 Nielsen DMAs.

Analysis

We began our analysis by plotting total calls to 1-800-QUIT-NOW and average population-weighted GRPs for *Tips* television ads by week. This plot provides an initial visual representation of the basic relationship between *Tips* advertising and calls to 1-800-QUIT-NOW. We then used multivariable linear regression to model weekly DMA-level calls to 1-800-QUIT-NOW as a function of weekly DMA-level GRPs for *Tips* television ads. In this model, GRPs were scaled such that the GRP coefficient represents the increase in weekly calls to 1-800-QUIT-NOW per DMA per increase of 100 weekly GRPs in a given DMA. We chose this scaling factor because 100 GRPs per week in a DMA represents the approximate average size of the weekly *Tips* TV ad buys from 2012 through 2023.

Our model also controlled for several potential confounders that could be associated with calls to 1-800-QUIT-NOW. These included the number of homes with a TV in the DMA (in the hundreds of thousands) as well as the adult smoking prevalence for each DMA. We estimated DMA-level smoking prevalence using state-level adult smoking prevalence from the CDC’s Behavioral Risk Factor Surveillance System for the years 2012 through 2022. DMAs completely contained within a single state were assigned that state’s adult smoking prevalence. For DMAs located in multiple states, we generated a weighted average adult smoking prevalence based on the percentage of the DMA’s population located in each state. At the time of this analysis, Behavioral Risk Factor Surveillance System data for 2023 were not yet available. We assumed adult smoking prevalence in 2023 was equal to the 2022 values. To account for trends in call volume over time that may have been independent of the *Tips* campaign, we included a linear weekly time trend variable. To account for fixed state-level differences that might be correlated with calls to 1-800-QUIT-NOW, we also included separate indicator variables for the primary state where each DMA is located (ie, primary state fixed effects). The primary state represents the state in which each market is completely located or the state containing the largest proportion of the DMA’s total population. There are 48 primary states, which each received their own indicator variable. Three states (Delaware, New Hampshire, and New Jersey) and the District of Columbia did not get primary state indicators. Although those areas are covered by Nielsen DMAs, there are no DMAs for which those areas represent the largest proportion of the DMA’s total population.

Using the regression results, we calculated the predicted values of calls to 1-800-QUIT-NOW at zero GRPs (ie, “no campaign”) to estimate what the number of calls would have been in the absence of the campaign. This “no campaign” predicted value was then compared to the actual number of calls received by 1-800-QUIT-NOW to estimate the total campaign-attributable additional calls during 2012–2023. We also assessed the impact of *Tips* TV ads on calls to 1-800-QUIT-NOW by calculating the percentage difference between actual calls received by 1-800-QUIT-NOW and the estimate of how many calls 1-800-QUIT-NOW would have received if there had not been any *Tips* TV ads (eg, *Tips* TV GRPs = 0).

Sensitivity Analyses

We conducted sensitivity analyses to further investigate two aspects of our study. First, we examined whether, and to what degree, the potential misassignment of some calls to 1-800-QUIT-NOW from cell phones to Nielsen DMAs affected our results. Because calls to 1-800-QUIT-NOW are matched with Nielsen DMAs based on the area code of the call, callers with cell phones may have area codes that do not correspond to the DMA where they resided when they called the quitline. Since landlines are not subject to this limitation, we ran alternative versions of our model that were separately limited to only landline calls and then to only cell phone calls. These models provide estimated effects of *Tips* TV ads on calls among landline and cell phone callers, respectively. We also estimated a simple, aggregate national model wherein we did not match calls to 1-800-QUIT-NOW with a Nielsen DMA. In this model, *Tips* GRPs varied by time but not by DMA, eliminating any potential for bias arising from area code to DMA misassignments. Using this model, we examined the relationship between weekly total calls to 1-800-QUIT-NOW in the United States and total weekly GRPs for all *Tips* TV ads aired in the United States.

We conducted a second sensitivity analysis to examine whether the magnitude of the *Tips* campaign effects on calls to 1-800-QUIT-NOW varied significantly in the period from 2012 through 2023 and the extent to which our estimate of the cumulative campaign effect is consistent with the average of annual campaign effects. Additionally, the period covered by our data includes 2020, when the global COVID-19 pandemic began. As a result of the pandemic, a national emergency

was declared in the United States on March 13, 2020, just prior to the launch of the 2020 *Tips* campaign on March 23, 2020. During this unprecedented emergency, there was nearly universal media and news coverage related to COVID-19. We were interested to see whether the COVID-19 pandemic altered or affected the relationship between *Tips* TV ads and calls to 1-800-QUIT-NOW, particularly as pandemic-related news coverage may have distracted from preplanned health education campaigns such as *Tips*.

To address these questions, our second sensitivity analysis estimated separate year-specific models for the years 2012 through 2023 using the same analysis data and model specifications as our main multiyear model. These annual models produced year-specific estimates of the impact of *Tips* TV ads on calls to 1-800-QUIT-NOW. We compared the total model-predicted campaign-attributable increases in calls from the annual models for the years 2012 through 2023 to the model-predicted campaign-attributable increases in calls from our main multiyear model for the years 2012 through 2023. To address the question of whether the COVID-19 pandemic might have affected the relationship between *Tips* TV ads and calls to 1-800-QUIT-NOW, we then compared year-specific model results for 2020 to the annual model results for the 3 years prior to and after 2020.

Results

Figure 1 shows the variation in weekly calls to 1-800-QUIT-NOW and GRPs for *Tips* TV ads from 2012 through

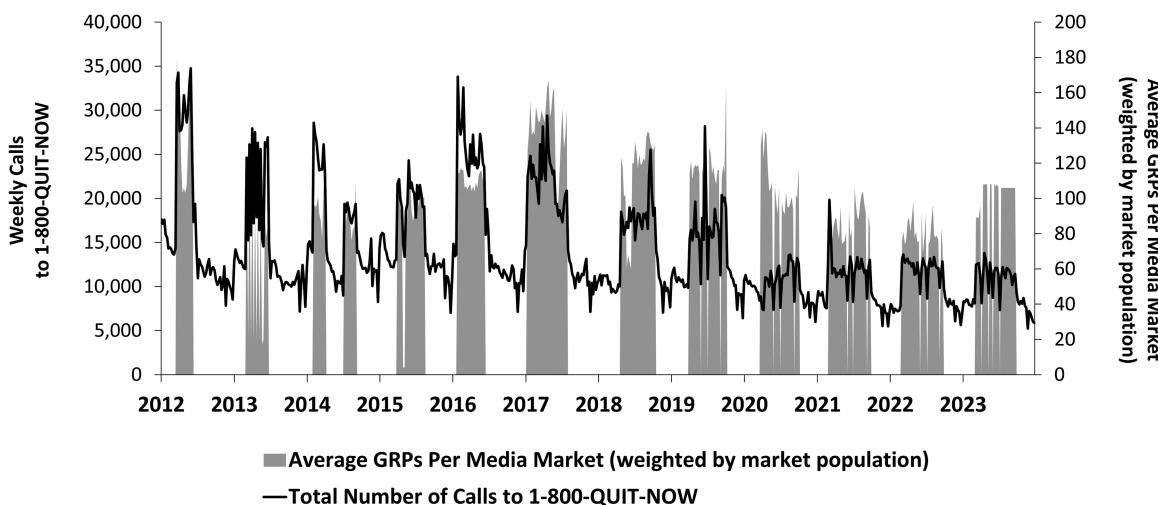


Figure 1. Total national calls to 1-800-QUIT-NOW and average market-level GRPs for *Tips* television ads by week, January 2012–December 2023. GRPs = Gross rating points. Defined as the product of reach (ie, the proportion of the audience that is exposed to a given advertisement) and frequency (ie, the number of times the audience is exposed to an advertisement) during a given period. In 2012, *Tips* aired March 19–June 10, for a 12-week campaign. In 2023, *Tips* aired March 4–June 23, for a 16-week campaign. The campaign employed a pulsing strategy during the first 12 weeks where national television ads alternated between being on air in 1 week and off air during the following week. Television ads were on air for a total of 10 weeks during the campaign. In 2014, *Tips* aired February 3–September 7, for an 18-week campaign. The campaign was implemented in two separate 9-week phases (February 3–April 6 and July 7–September 7), with a 13-week period between each phase. In 2015, *Tips* aired March 30–August 16, for a 20-week campaign. In 2016, *Tips* aired January 25–June 12, for a 20-week campaign. In 2017, *Tips* aired January 9–July 30, for a 29-week campaign. In 2018, *Tips* aired April 23–October 14, for a 25-week campaign. In 2019, *Tips* aired April 1–October 6, for a 27-week campaign. *Tips* television ads were off air for three holiday weeks during the campaign: May 27–June 2 (Memorial Day); July 1–July 7 (Independence Day); September 2–September 9 (Labor Day). In 2020, *Tips* aired March 23–October 4, for a 28-week campaign. *Tips* television ads were off air for three holiday weeks during the campaign: May 25–May 31 (Memorial Day); June 29–July 5 (Independence Day); September 7–September 13 (Labor Day). In 2021, *Tips* aired March 1–September 26, for a 30-week campaign. *Tips* television ads were off air for three holiday weeks during the campaign: May 31–June 6 (Memorial Day); June 28–July 4 (Independence Day); September 6–September 12 (Labor Day). In 2022, *Tips* aired February 28–September 25, for a 30-week campaign. *Tips* television ads were off air for two holiday weeks during the campaign: May 30–June 5 (Memorial Day); July 4–July 10 (Independence Day). In 2023, *Tips* aired March 6–September 24, for a 29-week campaign. *Tips* television ads were off air for 4 weeks during the campaign, two of which were holiday weeks: April 3–April 9; May 8–May 14; May 29–June 4 (Memorial Day); July 3–July 9 (Independence Day).

Table 1. Multivariable Linear Regression Model of the Relationship Between Exposure to Weekly *Tips* Television Ads and Weekly Calls to 1-800-QUIT-NOW, January 2, 2012–December 31, 2023

Model variables	β coefficient (P-value ^a) [95% CI]
<i>Independent variable</i>	
Weekly GRPs for <i>Tips</i> Television Ads (in 100s)	39.94 (.000) [39.11 to 40.78]
<i>Control variables^b</i>	
DMA-level number of homes with a TV (in 100 000s)	6.11 (.000) [5.99 to 6.23]
DMA-level adult smoking prevalence	1.28 (.000) [0.92 to 1.65]
Weekly time trend	-0.06 (.000) [-0.07 to -0.06]

CI = confidence interval; GRP = gross rating points.

Model includes data for 8 617 439 calls to 1-800-QUIT-NOW for 2012 through 2023. Observations in the model consist of weekly calls for 626 weeks from 2012 through 2023 from 210 Nielsen Designated Market Areas (DMAs). The sample size for the model is 131 460, which is based on call volume counts for 626 weeks in 210 DMAs ($626 \times 210 = 131\ 460$). $R^2 = 0.551$.

^aCalculated from standard ordinary least squares regression *t* tests for regression coefficient.

^bThe model also includes primary state fixed effects which represent the state where each DMA is located (if the DMA is contained completely within a single state) or the state containing the largest proportion of the DMA's total population (if the DMA is located in multiple states). There are 48 primary states, which each receive their own indicator variable. Three states (Delaware, New Hampshire, and New Jersey) as well as the District of Columbia do not have primary state indicators since no DMAs have the largest proportion of their total population located within those areas. All primary state fixed effects were statistically significant ($p < .05$), except for two primary states.

2023. Over the entire period, there were 8 617 439 calls to 1-800-QUIT-NOW, with an average of 13 766 calls per week. During the 269 weeks when *Tips* TV ads were on air, there were a total of 4 806 934 calls, with an average of 17 870 calls per week and an average of 104 GRPs for *Tips* TV ads per week and per Nielsen DMA, weighted by market population. During the remaining 357 weeks when *Tips* TV ads were off the air, there were a total of 3 810 505 calls, with an average of 10 674 calls per week and zero GRPs for *Tips* TV ads.

Table 1 presents results from our regression model of weekly DMA-level calls to 1-800-QUIT-NOW as a function of weekly DMA-level GRPs for *Tips* television ads. GRPs for *Tips* TV ads were positively and significantly associated with increases in calls to 1-800-QUIT-NOW ($b = 39.94$, $p < .001$). Our model results indicated that DMAs that had more homes with a television and higher adult smoking prevalence tended to have more calls to 1-800-QUIT-NOW per week, regardless of whether *Tips* TV ads were on air ($p < .001$). The linear weekly time trend was negative and statistically significant ($p < .001$). This indicates that there was a small downward trend in weekly calls to 1-800-QUIT-NOW over the 12-year period of 2012 through 2023, independent of the *Tips* campaign or *Tips* TV ads. The slight linear decrease in average weekly calls to 1-800-QUIT-NOW is consistent with observed decreases in DMA-level average adult smoking prevalence, which declined by approximately 31% over the same period.

Using the model-predicted value of calls at zero TV GRPs, we estimated that during the 269 weeks when *Tips* TV ads were airing, there would have been 2 724 648 (confidence interval [CI]: 2 590 910–2 858 382) calls if *Tips* TV ads had

not aired (ie, if GRPs for all *Tips* TV ads equaled zero; **Figure 2, Table 2**). During this period, actual calls totaled 4 806 934. Therefore, we estimate there were 2 082 286 (CI: 1 948 552 to 2 216 024) calls attributable to *Tips* TV ads from 2012 through 2023. This represents a 76% increase in calls during weeks when *Tips* TV ads were on air, compared to the estimated 2 724 648 calls that would have been received during those weeks if *Tips* TV ads had not aired.

For the 626 weeks from 2012 through 2023, including the 269 weeks when *Tips* TV ads were on air as well as the 357 weeks when *Tips* TV ads were off air, the 2 082 286 estimated additional calls associated with *Tips* TV ads represent a 32% increase in calls to 1-800-QUIT-NOW, compared to the estimated 6 535 153 calls that would have been received if *Tips* TV ads had not aired.

Sensitivity Analyses

In total, there were 3.23 million call records from landline phones (37%) and 5.36 million from cell phones (63%) in our analytic data. GRPs for *Tips* TV ads were positively and significantly associated with increases in calls to 1-800-QUIT-NOW for both landline and cell phone calls ($p < .001$). Our simplified, aggregate national model analyzed total weekly calls to 1-800-QUIT-NOW from all valid U.S. area codes as a function of total GRPs delivered nationally and did not consider variation in either calls or GRPs by DMA. Results from this model also showed that weekly GRPs for *Tips* TV ads were positively and significantly associated with increases in calls to 1-800-QUIT-NOW ($b = 40.39$, $p < .001$). The simplified model estimated 2 099 456 (95% CI: 2 005 015 to 2 193 902) additional calls associated with *Tips* TV ads, which represents a 78% increase in calls above what calls would have been if the *Tips* campaign had not occurred. These results are very similar to the primary market-level model results showing an estimated 76% increase in calls above the estimated number of calls that would have been received if the *Tips* campaign had not occurred.

Tips GRPs were positively and significantly associated with increases in calls to 1-800-QUIT-NOW ($p < .001$) for each of the year-specific annual models. Summing the number of calls attributable to *Tips* TV ads estimated by each of the 12 year-specific models yielded a total of 1 920 410 calls attributable to *Tips* TV ads from 2012 through 2023, which is 161 876 calls fewer (7.8% lower) than the 2 082 286 campaign-attributable calls estimated by our single multiyear model. Looking across the year-specific models, the annual campaign-attributable percentage increase in calls averaged 68%, with a median annual percentage increase of 62%.

Although *Tips* GRPs were positively associated with increases in calls to 1-800-QUIT-NOW in all 12 years from 2012 through 2023, the magnitude of the campaign effect was the smallest during 2020. We estimated the percentage increase in calls during weeks when *Tips* TV ads were on air was 25% in 2020 compared to annual percentage increases of at least 50% for all other years from 2012 through 2023. During the 3-year period before the onset of the COVID-19 pandemic (2017–2019), the estimated annual campaign-attributable percentage increase in calls to 1-800-QUIT-NOW ranged from 54% to 65%, with an average of 60%. By comparison, after the initial stages of the pandemic in 2020, during the 3-year period from 2021 through 2023, the annual percentage increase in calls to 1-800-QUIT-NOW associated

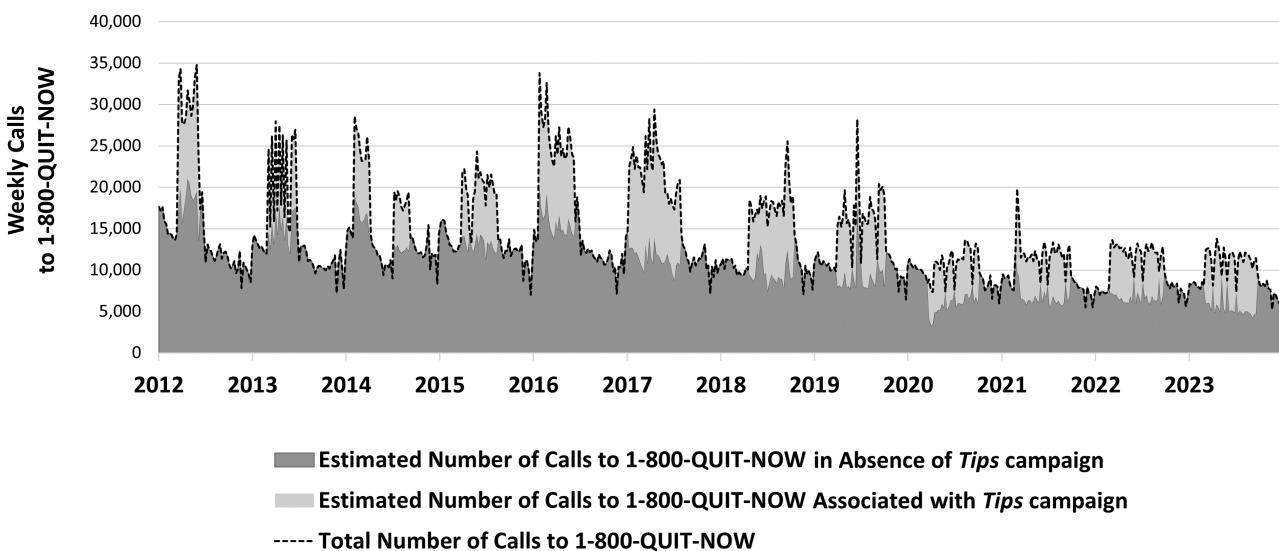


Figure 2. Impact of CDC *Tips* campaign on calls to 1-800-QUIT-NOW: 2012–2023. Notes: The area shaded in dark gray represents the estimated number of calls to 1-800-QUIT-NOW in absence of the *Tips* campaign. During weeks when *Tips* television ads were not on air, this area is equal to the actual total number of calls received by 1-800-QUIT-NOW. During weeks when *Tips* television ads were on air, this is the estimated number of calls that 1-800-QUIT-NOW would have received if no *Tips* television ads had aired. This estimate is based on predictions from our multivariable linear regression model. The area shaded in light gray represents the estimated calls to 1-800-QUIT-NOW that were associated with *Tips* television ads. During weeks when *Tips* television ads were not on air, no light gray areas appear on the chart. During weeks when *Tips* television ads were on air, this represents the difference between actual calls received by 1-800-QUIT-NOW and estimated calls to 1-800-QUIT-NOW in absence of *Tips* television ads.

Table 2. Estimate of Calls to 1-800-QUIT-NOW Associated with *Tips* Television Advertisements: 2012–2023

Measure	<i>Tips</i> TV Ads		Total
	Off air	On air	
Number of weeks	357	269	626
Actual calls to 1-800-QUIT-NOW	3 810 505	4 806 934	8 617 439
Estimated calls to 1-800-QUIT-NOW: in absence of <i>Tips</i> TV ads	3 810 505	2 724 648 [2 509 910–2 858 382]	6 535 153 [6 401 415–6 668 887]
Estimated calls to 1-800-QUIT-NOW: associated with <i>Tips</i> TV ads	0	2 082 286 [1 948 552–2 216 024]	2 082 286 [1 948 552–2 216 024]

with *Tips* TV ads ranged from 50% to 60%, with an average of 55%.

Discussion

Over the first 12 years of the *Tips* campaign, from 2012 through 2023, *Tips* TV ads were associated with nearly 2.1 million additional calls to 1-800-QUIT-NOW (Table 2). Based on our analysis, actual calls received by 1-800-QUIT-NOW during the 269 weeks when *Tips* TV ads were on air were 76% higher than the estimated number of calls that would have been received during those weeks if the *Tips* campaign had not occurred. Our results demonstrate that *Tips* was associated with statistically significant increases in calls to 1-800-QUIT-NOW during each of the first 12 years of the campaign, including during the onset of the COVID-19 pandemic and related emergency declarations in 2020. Although the effects of the campaign were smaller in 2020, *Tips* still generated significant increases in calls despite widespread press coverage of COVID-19 and saturation of the broader media landscape with pandemic-related topics and content. Furthermore, our results suggest the *Tips* campaign's effects

on calls to 1-800-QUIT-NOW rebounded to pre-pandemic magnitudes in the years following 2020. These findings point to the continued robust impact of *Tips* and mass media campaigns promoting evidence-based quitlines.

This study has some limitations to consider. First, calls to 1-800-QUIT-NOW were matched to media markets based on the caller's area code. However, some people, particularly people with cell phones, might have called 1-800-QUIT-NOW from an area code that did not correspond with the area where they resided when they called 1-800-QUIT-NOW. Results from our sensitivity analysis indicated that *Tips* TV GRPs were positively and significantly associated with increases in both landline and cell phone calls. In addition, total weekly GRPs for all *Tips* TV ads aired in the U.S. were associated with total weekly calls in a simpler aggregated analysis that was not subject to market-level GRP variation. This simplified model produced nearly identical results to the main model that used market-level variation in GRPs and calls to 1-800-QUIT-NOW. Based on the sensitivity analysis, we do not believe that our results are affected by potential mismatching of calls to media markets.

A second limitation of our study is that our analysis was based on paid *Tips* TV media that aired from 2012 through 2023. We were not able to control for other *Tips*-related paid media (such as digital media), public service announcements, earned media, or state-purchased media that also used *Tips* ads. Such additional media could have prompted additional calls to 1-800-QUIT-NOW. However, most of the *Tips* campaign's media buy has been devoted to TV advertising. We are not aware of any state-based campaigns that have invested advertising resources at a scale similar to the *Tips* campaign and that promote calls to 1-800-QUIT-NOW. In addition, *Tips* digital ads predominantly drive users to the *Tips* campaign website via the URL in the ads. Although ad viewers can find information about 1-800-QUIT-NOW on the campaign website, calling the quitline is not an explicit call to action in the campaign's digital ads. Given the timing of *Tips* media buys, the 1-800-QUIT-NOW call to action in all *Tips* TV ads, and the association between GRPs for *Tips* TV ads and calls to 1-800-QUIT-NOW shown in [Figure 1](#), we do not believe any of the factors noted here could significantly confound our results.

Our study shows that during the first 12 years of the *Tips* campaign, from 2012 through 2023, *Tips* TV ads were associated with significant increases in calls to 1-800-QUIT-NOW, which connects callers with state-based telephone quitlines that provide free, evidence-based assistance to help people quit using commercial tobacco products. Our findings are consistent with previous studies showing that *Tips* had immediate effects on information-seeking behavior, such as calling a quitline.²³⁻²⁶ These substantial increases in calls to 1-800-QUIT-NOW associated with exposure to *Tips* TV ads also translate to a higher likelihood that a greater number of people received evidence-based cessation services that have been shown to be effective at helping people successfully quit smoking. The results presented in this paper add to a growing body of research on the *Tips* campaign, which has demonstrated effectiveness in: generating calls to 1-800-QUIT-NOW²³⁻²⁶; increasing cessation-related attitudes and beliefs, quit intentions, quit attempts,³⁰⁻³⁵ and sustained quits^{32,34,35}; preventing smoking relapse³⁶; and offering a cost-effective public health intervention.³⁷ Collectively, this research suggests the *Tips* campaign remains poised to continue having long-term effects on smoking cessation-related health outcomes.

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Declaration of Interest

The authors declare that they have no conflicts of interest, financial or otherwise.

Author Contributions

Nathan Mann (Conceptualization [lead], Data curation [equal], Formal analysis [lead], Methodology [lead], Project administration [equal], Supervision [lead], Visualization [equal], Writing—original draft [lead], Writing—review & editing [lead]), Rebecca Murphy (Conceptualization [equal], Project administration [equal], Writing—original draft [equal], Writing—review & editing [equal]), Kevin Davis (Conceptualization [equal], Formal analysis [supporting], Methodology [equal], Project administration [supporting], Writing—original draft [equal], Writing—review & editing [equal]), Annette Von Jaglinsky (Data curation [equal], Formal analysis [equal], Methodology [supporting], Visualization [equal], Writing—original draft [supporting], Writing—review & editing [supporting]), Robert Rodes (Conceptualization [supporting], Project administration [supporting], Writing—original draft [supporting], Writing—review & editing [supporting]), and Diane Beistle (Conceptualization [supporting], Project administration [supporting], Writing—original draft [supporting], Writing—review & editing [supporting])

Data Availability

The data underlying this article were provided by the National Cancer Institute (NCI) and PlowShare by permission and by Nielsen Media under license. Data will be shared on reasonable request to the corresponding author with permission of NCI, PlowShare, and Nielsen Media.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Exhibit D

Journal Pre-proof

The Impact of “The Real Cost” on E-cigarette Initiation among U.S. Youth

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TITLE: The Impact of “The Real Cost” on E-cigarette Initiation among U.S. Youth

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ABSTRACT: 250/250 WORDS

Introduction

E-cigarette use among U.S. youth has declined in recent years. This study examined the effect of exposure to “The Real Cost” Youth E-cigarette Prevention Campaign on e-cigarette initiation among U.S. youth aged 11–18.

Methods

Data were analyzed from the first two waves of a longitudinal evaluation of the campaign (baseline: August–December 2023; follow-up: June–September 2024; analyses: 2025). The analysis included youth who reported never having tried an e-cigarette at baseline and completed the follow-up survey ($n = 3,408$). An exposure index (range: 0–16) was generated using respondents' self-reported frequency of exposure to each of four campaign advertisements (0 = never; 4 = very often). The impact of exposure on e-cigarette initiation was examined at follow-up using a discrete-time survival analysis logistic regression model, controlling for potential confounding variables. The estimated number of youth prevented from initiating e-cigarette use was extrapolated to the national youth population.

Results

The odds of reporting e-cigarette initiation at follow-up decreased as exposure to campaign advertisements increased. For every unit increase in the exposure index, there was a 6% reduction in the probability of initiation. The campaign prevented an estimated 444,252 (95% CI: 73,639–814,866) U.S. youth aged 11–18 from initiating e-cigarettes between 2023 and 2024.

Conclusions

Youth with higher exposure to “The Real Cost” E-cigarette Prevention Campaign ads were less likely to initiate e-cigarettes during the study period. These findings indicate that the campaign has contributed to recent declines in e-cigarette use among U.S. youth.

INTRODUCTION

E-cigarettes are currently the most commonly used tobacco product by U.S. youth, with 1.63 million youth reporting use of e-cigarettes in 2024.¹ E-cigarette use exposes youth to harmful chemicals, including nicotine, which is highly addictive and poses dangers to adolescent brain development.² E-cigarette use has declined considerably since its peak in 2019, including a significant drop in the number of students who reported current e-cigarette use between 2023 and 2024—2.13 million youth reported use in 2023, compared to 1.63 million in 2024.³

Tobacco prevention public education campaigns are a critical component of comprehensive tobacco control efforts with decades of research highlighting their success at changing tobacco risk perceptions, intentions to use tobacco products in the future, and tobacco product use initiation.⁴⁻⁶ For more than a decade, the U.S. Food and Drug Administration (FDA) Center for Tobacco Products (CTP) has utilized an evidence-based health communication and campaign framework to plan, develop, implement, and evaluate its youth tobacco prevention public education campaigns, starting with “The Real Cost” Youth Cigarette Prevention Campaign⁷ which first aired in 2014. This health communication and campaign framework encompasses foundational research (e.g., conducting tobacco product surveillance, media landscaping, subject matter expert consultations, audience analysis),⁸ formative research (e.g., testing strategic and creative concepts with intended teen audiences to assess message comprehension and message performance),^{9,10} and evaluation research (e.g., conducting process, implementation, and outcome evaluation).¹¹⁻¹³ Additionally, campaign implementation is informed by a data-driven media strategy that identifies effective channels and messengers for the intended audience.¹⁴

To address the rapid increase in e-cigarette use among youth observed between 2013 to 2017, FDA expanded its messaging in 2018 to educate youth about the harms of e-cigarette use. FDA created and launched “The Real Cost” Youth E-cigarette Prevention Campaign under “The Real Cost” umbrella.¹⁵ To help maximize impact and best reach youth through the media channels they use most frequently, the campaign also moved away from traditional broadcast and cable TV in favor of a broader and deeper presence on digital and social media platforms.

Prior studies have found that “The Real Cost” e-cigarette prevention messages shifted tobacco- and cigarette-related beliefs among U.S. youth.^{13,16-18} However, to date, no study has assessed the potential effects of the campaign on youth e-cigarette use behaviors. The current paper addresses this gap by presenting findings from the evaluation of “The Real Cost” Youth E-cigarette Prevention Campaign and its impact on e-cigarette use initiation among a nationally representative longitudinal sample of U.S. youth.

METHODS

Sample

The sample consisted of a nationally representative longitudinal cohort of U.S. youth developed to evaluate “The Real Cost” Youth E-cigarette Prevention Campaign. The study used address-based sampling to identify households for inclusion in the study. Households were mailed invitations for an adult to complete an online screener designed to identify the presence of one or more eligible youth between 11 and 17 years of age. Parents of eligible youth were asked to provide permission for their child to participate. After obtaining parental permission, eligible youth were invited to provide consent/assent and take an online survey. Youth participants

received a \$25 incentive for completing each survey, with a \$5 bonus for completing in the first 30 days of data collection.

Baseline data were collected from August 2023 through December 2023, and follow-up data were collected from June 2024 through September 2024. All respondents who completed the baseline survey were invited to take the follow-up survey. At baseline, 5,347 youth completed the survey, with 77% returning to complete the follow-up survey ($N = 4,125$). The analytic sample for this study was restricted to respondents who reported never having used an e-cigarette at baseline, completed the follow-up survey, and passed data quality checks (these included assessing responses to survey attention checks, survey speeding, and item straightlining) at each wave, for a final sample size of 3,408. Oversight for this study was provided by the Advarra Institutional Review Board (Protocol number 00065019).

Measures

The primary outcome of interest was e-cigarette initiation among youth who had never used an e-cigarette at baseline. E-cigarette initiation was defined as a respondent transitioning from never having used an e-cigarette that contains nicotine at baseline to having ever used an e-cigarette that contains nicotine at follow-up. Ever use of an e-cigarette that contains nicotine was assessed with the question, “Have you ever tried vaping nicotine, even one time?” Respondents were asked to not consider e-cigarettes containing THC/CBD/Delta-8 when responding to survey questions about e-cigarettes.

The study examined individual-level variability in recall of the media campaign, a standard exposure measure employed in evaluations of mass media for over two decades.^{12,19-21} The main predictor variable was a linear index representing the frequency of exposure for each of four “The Real Cost” E-cigarette Prevention Campaign advertisements (ads) that were on air between baseline and follow-up. In the follow-up survey, respondents were shown 6- or 15-second clips of each video ad and asked, “Apart from this survey, how frequently have you seen this ad in the past 3 months?” More details on the ads (“Addiction Isn’t Pretty: Toilet,” “Don’t Pollute Yourself,” “Toxic Taxidermy,” and “Scary Enough”) can be found in Appendix Table A-1. Response options were 0 = “Never,” 1 = “Rarely,” 2 = “Sometimes,” 3 = “Often,” and 4 = “Very often.” Responses were summed across the four ads to generate a numeric linear awareness index representing total exposure ranging from 0 (never saw any ads) to 16 (saw all four ads very often). The larger values indicating greater frequency of exposure to the advertisements may reflect either seeing more ads or seeing any number of the ads more frequently.

Models controlled for demographic and environmental variables previously shown to be associated with e-cigarette use.²²⁻²⁵ The variables identified as potential covariates were then selected for inclusion based on a backward elimination approach, with a significance threshold of $p < 0.10$. The variables included in the final model were age (indicators for each age); living with someone who uses tobacco (0 = no, 1 = yes); household income (1 = less than \$30,000; 2 = \$30,000 to less than \$70,000; 3 = \$70,000 to less than \$110,000, 4 = \$110,000+); parent communication (mean of two items: “Thinking about the adult or adults you live with, how satisfied are you with the way you communicate with each other?” [5-point scale ranging from 1 – “Not at all satisfied” to 5 – “Very satisfied”] and “How close do you feel to the adult or adults

you live with?” [5-point scale ranging from 1 – “Not at all close” to 5 – “Very close”]); sensation seeking using the Brief Sensation Seeking Scale²⁶; self-reported social media frequency of use, based on 7-item response scales that indicate how often respondents reported use of Instagram, Snapchat, Facebook, TikTok, and Reddit (for each platform: 0 = never, 6 = several times a day) (tertiles of use averaged across social media platforms; mean values were categorized as 0–1.4 = Low [1], 1.5–3.4 = Medium [2] and 3.56 = High [3]); and frequency of exposure to e-cigarette promotional content on social media (0 = never; 1 = more than a week ago; 2 = sometime in the past week; 3 = sometime in the past day).

Analyses also adjusted for the number of months between a respondent’s participation in the baseline and follow-up surveys, as well as an indicator for self-reported awareness to other national tobacco prevention campaigns (i.e., Truth Initiative’s *truth* campaign and the Centers for Disease Control and Prevention’s *Tips From Former Smokers* [*Tips*] campaign) (0 = Not aware of ads from either campaign, 1 = Aware of ads from at least one other campaign).

Statistical Analysis

A discrete-time survival analysis was performed to examine the impact of the exposure index on e-cigarette initiation at follow-up by using logistic regression models that controlled for the above-mentioned demographic and environmental variables. The hazards at each age (i.e., the probability of initiating at that age given one has not yet initiated) were calculated using Stata’s post-estimation “margins” command.

The estimated number of youth prevented from initiating e-cigarette use was calculated using the difference between (a) the predicted probability for initiation by age as observed in this sample and (b) the predicted probability for initiation by age in a hypothetical scenario where exposure to the campaign was zero for all respondents. The difference in these two estimates (b-a) was calculated for each age and confidence intervals reflecting the uncertainty in the difference of the predicted probabilities of initiation were produced. These estimates (the lower bound, difference, and upper bound) were extrapolated to the national youth population for each age using estimates from the U.S. Census Bureau's 2023 American Community Survey²⁷ to estimate the number of youth who did not initiate e-cigarette use as a result of exposure to the campaign and a confidence interval around each estimate. The estimates were summed across ages to calculate the total number of youth who were prevented from initiating as a result of exposure to the campaign (see Table A-4 in the appendix for more details on the calculations).

Sensitivity analyses included discrete-time survival models for three additional exposure variations: a square root transformation (to capture diminishing returns), a quadratic transformation, and a dichotomous threshold exposure indicator (awareness index score of 0–6 vs. 7+) to capture the fact that the relationship between exposure and the outcome may not be linear. Model fit was assessed for the alternative models using AIC/BIC criterion; results indicated the primary model using the linear frequency index was the best fit, though this conclusion may be specific to the range of exposures examined. Additionally, a model was run to assess potential confounds related to respondents' prior campaign exposure by adjusting for the frequency of exposure index from respondents' baseline surveys (which captured exposure to ads

on air prior to baseline). All analyses (main analysis and sensitivity) were conducted in 2025 using unweighted data with Stata, version 16.0.

RESULTS

This analysis included 3,804 observations. Table 1 presents unweighted descriptive statistics for the analytic sample. Among respondents who had never used an e-cigarette at baseline, 232 (6.8%) reported initiating e-cigarette use at follow-up. The analytic sample was predominantly composed of 12- to 17-year-olds at follow-up, with fewer 11-year-olds (2.4%) and 18-year-olds (9.5%). 23.1% of the analytic sample reported living with a person who used tobacco at follow-up and 36.8% of respondents reported prior exposure to promotional content for e-cigarettes on social media.

[Table 1]

Figure 1 shows the distribution of the frequency of exposure index on a scale of zero to 16. The mean exposure index for the analytic sample was 3.7, and 77.4% of the sample reported at least some exposure to one or more of the campaign advertisements (value of 1 or more on the index). Individual ad awareness descriptives are in Appendix Table A-2.

[Figure 1]

Table 2 provides the adjusted model results for the discrete-time survival analysis on the probability of initiation in relation to campaign exposure. Higher awareness of the campaign was

significantly associated with a reduction in the odds of initiating e-cigarettes at follow-up (adjusted OR = 0.94; 95% CI: 0.90–0.99). The effect was linear; with each unit increase in the exposure index, the risk of initiating e-cigarettes decreased by 6%. The negative, significant relationship between campaign advertisements exposure and e-cigarette initiation was consistent across all sensitivity analyses, indicating the findings are robust to different specifications of exposure (Appendix Table A-3).

[Table 2]

Models also controlled for time between waves (in months) and awareness of another tobacco prevention/cessation campaign (*Tips, truth*).

Figure 2 shows the effect of the campaign on e-cigarette initiation by age. The figure shows the hazard, or probability, of e-cigarette initiation by age (a) as observed in the study with actual exposure levels and (b) in the hypothetical scenario of no exposure to the campaign, with the frequency of exposure index equaling zero for all observations. Extrapolating the difference in the initiation rates (b-a) for each age to the U.S. population of youth at each age across the range of respondents (11 to 18), the campaign was associated with preventing 444,252 (95% CI: 73,639–814,866) U.S. youth from initiating e-cigarette use during the study period (Appendix Table A-4).

[Figure 2]

DISCUSSION

The current study found that exposure to “The Real Cost” Youth E-cigarette Prevention Campaign is associated with lower odds of initiating e-cigarette use at follow-up among a nationally representative longitudinal cohort of youth. Specifically, the campaign prevented an estimated 444,252 (95% CI: 73,639–814,866) youth 11 to 18 years of age from initiating e-cigarette use nationwide between 2023 and 2024.¹ These findings are consistent with prior evaluations of “The Real Cost” campaigns, which have shown that campaign exposure is related to increased tobacco product harm perceptions^{13,16-18} and decreased tobacco product use among U.S. youth.^{11,12}

Data from the 2024 National Youth Tobacco Survey (NYTS) data indicate that e-cigarette use among U.S. middle and high school students declined by nearly 500,000 youth between 2023 and 2024.²⁸ The current study’s findings suggest that “The Real Cost” Youth E-cigarette Campaign was an important contributor to this decline. However, it is important to acknowledge that the observed decreases to prevalence of youth e-cigarette use in the U.S. should be considered in the context of comprehensive tobacco control strategies implemented during the same time period—including those at the national level. For example, legislation signed in December 2019 immediately raised the federal minimum age of sale of tobacco products in the United States from 18 to 21 years of age,²⁹ leading to promulgation of the FDA final rule that went into effect in August 2024³⁰; FDA review of premarket applications for new tobacco products resulted in marketing denial orders of e-cigarettes with youth-appealing designs and flavors, including candy and fruit; and FDA enforcement actions such as warning letters, civil money penalties, injunctions, and seizures ensure those across the supply chain obey laws that prevent youth tobacco product use³¹ as well as obey laws at the state, local, and tribal levels (e.g.,

state e-cigarette taxes; smoke-free indoor air laws prohibiting the use of e-cigarettes in indoor areas of private worksites, restaurants, and bars; restrictions on flavored e-cigarettes).³²

The success of “The Real Cost” Youth E-cigarette Prevention Campaign in preventing youth e-cigarette use reinforces that public education initiatives, such as mass media campaigns that communicate the harms and risks of tobacco product use, are a key component of the comprehensive regulatory approach required to prevent and reduce youth tobacco product use. An iterative, science-based campaign framework remains critical to sustain the campaign’s prevention of youth tobacco use and continually refresh its understanding of teen audiences, factors that place them at risk for tobacco initiation and use, and effective message delivery channels. FDA’s campaign framework uses evidence-based strategies that will enable “The Real Cost” to evolve to address public health needs, including the rise of new and emerging tobacco products. The agency’s tobacco campaign framework, rooted in rigorous, science-based, public health and communications best practices, will continue to guide development of effective youth prevention messaging that is tailored to the intended teen audiences and responsive to the dynamic tobacco and media landscapes.

In addition to demonstrating the success of “The Real Cost” campaign, the findings also highlighted factors associated with increased youth e-cigarette initiation—namely, greater levels of social media use and tendency toward sensation seeking, lower levels of household income and satisfaction with parental communication, and household tobacco use. These findings are congruent with prior literature suggesting that sensation seeking,³³ along with increased normalization of e-cigarette-related content³⁴ and behaviors are associated with greater

susceptibility to e-cigarette use, while parental communication²⁵ may serve as a protective factor due to increased messaging surrounding risky behavior. Future public health campaigns could benefit from exploring how these social and behavioral factors might inform effective e-cigarette prevention messages.

Study limitations include the inability to control for the effects of state- or local-level public education campaigns, though the model did control for respondents' exposure to other national tobacco prevention campaigns. In addition, models only examined the effect of campaign exposure on e-cigarette initiation. Follow-up analyses assessing the campaign's potential impact on disrupting the progression of experimentation to regular or daily e-cigarette use would broaden understanding of the campaign's impact on youth tobacco prevention. Relatedly, this campaign examines initiation over a 1-year period, but longer studies are required to determine whether the campaign effectively led to sustained abstinence among this cohort. The exposure index measure in this study is based on recall of the ads airing at the highest levels between the survey waves and does not capture all potential exposure to the full range of campaign advertising materials (e.g., audio spots, social media reels, other custom placements), potentially rendering a smaller effect size for campaign exposure in the modeling. Despite use of a potentially narrow measure of campaign exposure, this study found robust evidence of campaign effect on youth e-cigarette use. As noted above, the exposure index is assessed using self-reported data, which is subject to recall bias. However, prior studies have demonstrated that findings using self-reported measures of exposure align with findings for exogenous measures of exposure not subject to recall bias.^{11,12} The present study is unable to control for policies or regulations at the national, state, or local level enacted during the study period (August 2023 to

October 2024). This study examines differences in the probability of youth e-cigarette initiation by different exposure levels to the campaign in a longitudinal cohort. Therefore, other national policies or regulations should affect youth equally within the study and not impact the study findings; however, to the extent that state or local policies might be related to exposure and initiation, their omission could bias the findings. The campaign is implemented at a national level, therefore the impact to study findings are expected to be minimal and not a threat to the study validity. Despite these limitations, the study findings collectively support the causal role of the campaign on preventing youth e-cigarette initiation.

CONCLUSIONS

This is the first longitudinal study demonstrating the behavioral effects of a national tobacco education campaign about e-cigarettes on U.S. youth. This study and other effective tobacco-focused campaigns are similar in their conclusions^{35,36}—because media effects on behavior occur in cluttered, real-world environments, substantially resourced campaigns with high advertising levels over extended periods of time are crucial to achieve sustainable population changes in tobacco use behaviors. In demonstrating the effects of public health messages on population-level behaviors, evaluation studies such as this one provide strong support for continued implementation of science-based public education campaigns to reduce the future harms of tobacco use and improve the health of U.S. youth.

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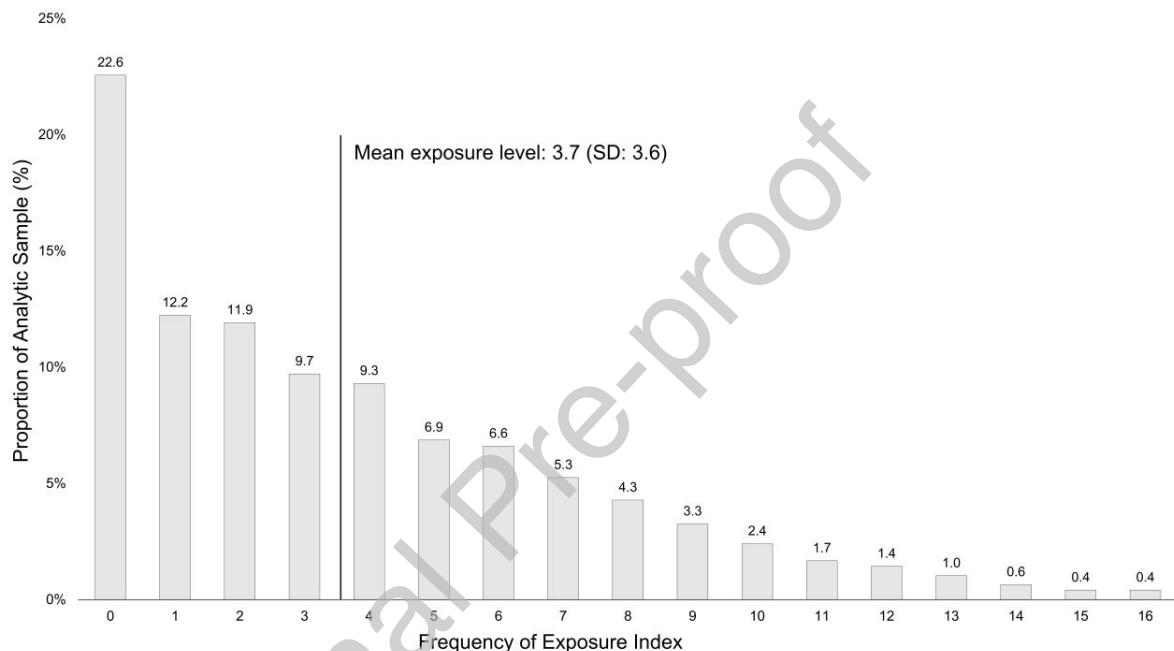


Figure 1. Distribution of the Self-Reported Frequency Index for Exposure to E-cigarette Campaign Advertisements at Follow-Up 1

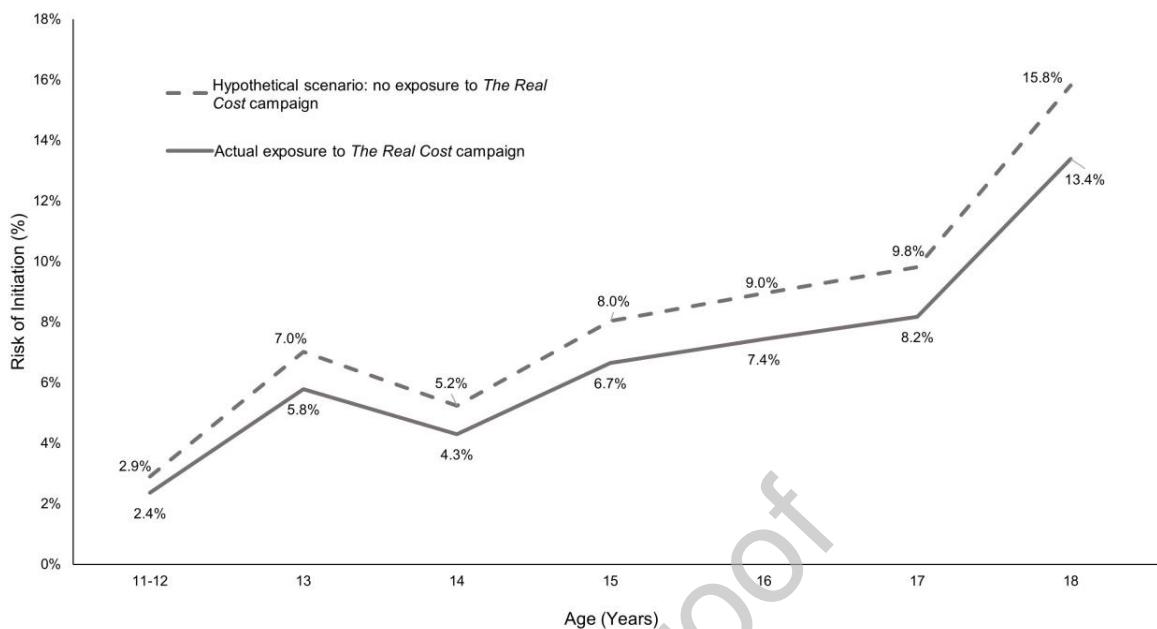


Figure 2. Estimated Youth E-cigarette Initiation Risk: Actual Exposure to “The Real Cost” Versus Hypothetical No-Exposure Scenario

Table 1. Demographic Characteristics: Analytic Sample of “The Real Cost” Youth E-cigarette Prevention Campaign Longitudinal Evaluation Measures	N (%) or Mean (SD)
E-cigarette initiation between baseline and follow-up	
No	3,176 (93.2)
Yes	232 (6.8)
Age in years ^a	
11	82 (2.4)
12	424 (12.4)
13	518 (15.2)
14	548 (16.1)
15	517 (15.2)
16	533 (15.6)
17	462 (13.6)
18	324 (9.5)
Household income ^b	
Less than \$30,000	335 (9.9)
\$30,000 to under \$70,000	689 (20.3)
\$70,000 to under \$110,000	752 (22.2)
\$110,000 or more	1,612 (47.6)
Lives with someone who uses tobacco products	
No	2,612 (76.9)
Yes	786 (23.1)
Parent communication scale	4.4 (0.8)
Sensation-seeking scale	2.9 (0.9)

Aware of another tobacco prevention/cessation campaign (<i>Tips, truth</i>)	
No	1,273 (37.4)
Yes	2,135 (62.6)
Time between waves (months)	9.7 (1.2)
Tertiles of social media platform use index (1 – Low, 2 – Medium, 3 – High)	1.8 (0.8)
Self-reported exposure to vaping promotional content on social media	
Never	2,156 (63.3)
More than a week ago	619 (18.2)
Sometime in the past week	472 (13.9)
Sometime in the past day	160 (4.7)

^a Due to sample sizes, 11- and 12-year-old respondents were combined into a single group in the analysis.

^b Analyses were conducted using baseline responses for household income.

Table 2. Discrete-Time Survival Model: Relationship between Self-Reported Exposure to “The Real Cost” and Youth E-cigarette Initiation^a

Explanatory Variables	OR (95% CI)
Self-reported exposure to “The Real Cost” ads	0.94* (0.90,0.99)
Age in years	
11–12	Ref
13	2.68* (1.17,6.14)
14	1.92 (0.83,4.43)
15	3.14** (1.41,7.01)
16	3.58** (1.62,7.92)
17	4.00*** (1.80,8.89)
18	7.41*** (3.36,16.34)
Household income	
Less than \$30,000	Ref
\$30,000 to under \$70,000	0.41*** (0.26, 0.65)
\$70,000 to under \$110,000	0.51** (0.33, 0.79)
\$110,000 or more	0.35*** (0.23, 0.53)
Lives with someone who uses tobacco products	2.37*** (1.77,3.18)
Parent communication scale	0.74*** (0.63,0.86)
Sensation-seeking scale	1.36*** (1.15,1.60)
Tertiles of social media platform use index (1-Low, 2-Medium, 3-High)	1.70*** (1.39,2.07)
Self-reported exposure to vaping promotional content on social media	
Never	Ref
More than a week ago	1.19 (0.81,1.73)

Explanatory Variables	OR (95% CI)
Sometime in the past week	1.55* (1.08,2.24)
Sometime in the past day	1.62 (0.94,2.80)

CI = Confidence interval; OR = Odds ratio; TRC = *The Real Cost*

Note: Boldface indicates statistical significance (*p < 0.05, **p < 0.01, ***p < 0.001).

^a United States, 2023–2024

CRediT author statement

Anna MacMonegle: Conceptualization, Methodology, Validation, Writing - Original Draft, Supervision, Project administration, Funding acquisition

Anh Nguyen Zarnndt: Conceptualization, Writing - Review & Editing, Supervision

Yifan Wang: Software, Formal analysis, Writing - Original Draft, Visualization

Morgane Bennett: Writing - Original Draft, Project administration

Vincenzo Malo: Software, Validation, Writing - Original Draft, Visualization

Leeann Siegel: Methodology, Writing - Original Draft

Lindsay Pitzer: Writing - Review & Editing

Allie Jaarsma: Validation, Writing - Original Draft, Visualization, Project administration

James Nonnemaker: Methodology, Validation, Writing - Review & Editing

Nathaniel Taylor: Resources, Writing - Original Draft, Project administration

Jennifer Duke: Conceptualization, Writing - Review & Editing, Funding acquisition

Exhibit E

**Recipient Information****1. Recipient Name**

HEALTH RESEARCH, INC.
150 Broadway STE 280
Riverview Center
Health Research, Inc.
Menands, NY 12204-2732
[NO DATA]

2. Congressional District of Recipient

20

3. Payment System Identifier (ID)

1141402155A1

4. Employer Identification Number (EIN)

141402155

5. Data Universal Numbering System (DUNS)

153695809

6. Recipient's Unique Entity Identifier (UEI)

WJ37AD42G8A5

7. Project Director or Principal Investigator

Dr. Barbara Wallace
barbara.wallace@health.ny.gov
518-474-0512

8. Authorized Official

Ms. Cheryl A. Mattox
Executive Director, Health Research, Inc.
hiringa@healthresearch.org
518-431-1200

Federal Agency Information

CDC Office of Financial Resources

9. Awarding Agency Contact Information

Mrs. Nadirah Watson
Grants Management Specialist
nwatson@cdc.gov
404-498-3029

10. Program Official Contact Information

Asha Banks
Public Health Advisor
vfq3@cdc.gov
770-488-1211

30. Remarks**Federal Award Information****11. Award Number**

5 NU58DP006802-05-00

12. Unique Federal Award Identification Number (FAIN)

NU58DP006802

13. Statutory Authority

301(a) and 317(k)(2) of the Public Health Service Act, [42 U.S.C. Section 241(a) and 247b(k)(2)], as amended.

14. Federal Award Project Title

New York State Tobacco Control Program

15. Assistance Listing Number

93.387

16. Assistance Listing Program Title

National and State Tobacco Control Program

17. Award Action Type

Non-Competing Continuation

18. Is the Award R&D?

No

Summary Federal Award Financial Information**19. Budget Period Start Date** 04/29/2024 - **End Date** 04/28/2025**20. Total Amount of Federal Funds Obligated by this Action** \$2,905,769.00

20a. Direct Cost Amount \$2,579,293.00

20b. Indirect Cost Amount \$326,476.00

21. Authorized Carryover \$0.00**22. Offset** \$0.00**23. Total Amount of Federal Funds Obligated this budget period** \$0.00**24. Total Approved Cost Sharing or Matching, where applicable** \$325,000.00**25. Total Federal and Non-Federal Approved this Budget Period** \$3,230,769.00**26. Period of Performance Start Date** 06/29/2020 - **End Date** 04/28/2025**27. Total Amount of the Federal Award including Approved Cost Sharing or Matching this Period of Performance** \$14,694,550.00**28. Authorized Treatment of Program Income**

ADDITIONAL COSTS

29. Grants Management Officer - Signature

Darryl Mitchell

**Recipient Information****Recipient Name**

HEALTH RESEARCH, INC.
150 Broadway STE 280
Riverview Center
Health Research, Inc.
Menands, NY 12204-2732

[NO DATA] Congressional District of Recipient

20

Payment Account Number and Type

1141402155A1

Employer Identification Number (EIN) Data

141402155

Universal Numbering System (DUNS)

153695809

Recipient's Unique Entity Identifier (UEI)

WJ37AD42G8A5

31. Assistance Type

Cooperative Agreement

32. Type of Award

Other

33. Approved Budget

(Excludes Direct Assistance)

I. Financial Assistance from the Federal Awarding Agency Only	
II. Total project costs including grant funds and all other financial participation	
a. Salaries and Wages	\$1,348,926.00
b. Fringe Benefits	\$538,221.00
c. Total Personnel Costs	\$1,887,147.00
d. Equipment	\$0.00
e. Supplies	\$300,360.00
f. Travel	\$12,810.00
g. Construction	\$0.00
h. Other	\$22,150.00
i. Contractual	\$356,826.00
j. TOTAL DIRECT COSTS	\$2,579,293.00
k. INDIRECT COSTS	\$326,476.00
l. TOTAL APPROVED BUDGET	\$2,905,769.00
m. Federal Share	\$2,905,769.00
n. Non-Federal Share	\$325,000.00

34. Accounting Classification Codes

FY-ACCOUNT NO.	DOCUMENT NO.	ADMINISTRATIVE CODE	OBJECT CLASS	CFDA NO.	AMT ACTION FINANCIAL ASSISTANCE	APPROPRIATION
3-9390L46	20NU58DP006802	DP	41.51	93.387	\$0.00	75-X-0948
4-939ZREN	20NU58DP006802	DP	41.51	93.387	\$2,905,769.00	75-24-0948



DEPARTMENT OF HEALTH AND HUMAN SERVICES Notice of Award

Centers for Disease Control and Prevention

Award# 5 NU58DP006802-05-00

FAIN# NU58DP006802

Federal Award Date: 04/18/2024

Direct Assistance

BUDGET CATEGORIES	PREVIOUS AMOUNT (A)	AMOUNT THIS ACTION (B)	TOTAL (A + B)
Personnel	\$ 0.00	\$ 0.00	\$ 0.00
Fringe Benefits	\$ 0.00	\$ 0.00	\$ 0.00
Travel	\$ 0.00	\$ 0.00	\$ 0.00
Equipment	\$ 0.00	\$ 0.00	\$ 0.00
Supplies	\$ 0.00	\$ 0.00	\$ 0.00
Contractual	\$ 0.00	\$ 0.00	\$ 0.00
Construction	\$ 0.00	\$ 0.00	\$ 0.00
Other	\$ 0.00	\$ 0.00	\$ 0.00
Total	\$ 0.00	\$ 0.00	\$ 0.00

AWARD ATTACHMENTS

HEALTH RESEARCH, INC.

5 NU58DP006802-05-00

1. Terms and Conditions

AWARD INFORMATION

Incorporation: In addition to the federal laws, regulations, policies, and CDC General Terms and Conditions for Non-research awards at <https://www.cdc.gov/grants/federal-regulations-policies/index.html>, the Centers for Disease Control and Prevention (CDC) hereby incorporates Notice of Funding Opportunity (NOFO) number DP20-2001, entitled National and State Tobacco Control Program, and application dated January 31, 2024, as may be amended, which are hereby made a part of this Non-research award, hereinafter referred to as the Notice of Award (NOA).

Total Approved Funding is included in Summary Federal Award Financial Information on page 1 of the NOA. All future year funding will be based on satisfactory programmatic progress and the availability of funds.

The federal award amount is subject to adjustment based on total allowable costs incurred and/or the value of any third-party in-kind contribution when applicable.

Note: Refer to the Payment Information section for Payment Management System (PMS) subaccount information.

Approved Component Funding: The NOFO provides for the funding of multiple components under this award. For this NOA, the approved funding level for each component is shown below:

NOFO Component	Amount
Component I	\$2,036,862
Component II	\$868,907

Financial Assistance Mechanism: Cooperative Agreement

Technical Review: Within 5 days of this Notice of Award's (NOA) issue date, the Technical Review will be accessible to the recipient in GrantSolutions Grant Notes. Contact the assigned Program Officer indicated in the NOA with any questions regarding this document or any follow up requirements and timelines set forth therein.

Substantial Involvement by CDC: This is a cooperative agreement and CDC will have substantial programmatic involvement after the award is made. Substantial involvement is in addition to all post-award monitoring, technical assistance, and performance reviews undertaken in the normal course of stewardship of federal funds.

CDC program staff will assist, coordinate, or participate in carrying out effort under the award, and recipients agree to the responsibilities as detailed in the NOFO and included below.

- Providing technical assistance to revise annual work plans.
- Assisting in advancing program activities to achieve project outcomes.
- Providing scientific subject matter expertise and resources.
- Collaborating with recipients to develop evaluation plans that align with CDC evaluation

activities.

- Providing technical assistance on recipient's evaluation and performance measurement plan.
- Providing ongoing training, technical assistance, and consultation on policy, systems, and environmental strategies and activities for tobacco control, including tobacco use and dependence treatment strategies and activities.
- Providing up-to-date information that includes dissemination of best practices for tobacco prevention and control.
- Informing and educating recipients and other partners about evidence-based policy, systems, and environmental strategies and activities for tobacco control through workshops, conferences, training, electronic and verbal communication, including the National Conference on Tobacco or Health.
- Identifying, developing, and disseminating education media campaign materials for use by programs; facilitating coordination of education media ads between programs; providing technical assistance on design, implementation, and evaluation of media.
- Providing monthly National Tobacco Control Program, Media Network, and periodic Evaluation Technical Assistance webinars to provide updates from subject matter experts about relevant tobacco-related topics and issues.
- Maintaining electronic mechanisms for information sharing, program planning, and progress reporting.
- Developing and maintaining partnerships with federal and non-federal organizations to assist in tobacco control and maintain a national infrastructure that complements the state infrastructure.
- Serving as a resource to recipients in identifying and eliminating tobacco-related disparities among population groups.
- Maintaining a website with access to a data warehouse containing comparable measures of tobacco use and dependence prevention and control from different data sources.
- Helping identify gaps in the evidence-base of tobacco control and prioritizing efforts to fill those gaps; providing training and technical assistance on publications and opportunities for dissemination of program evaluation findings.
- Serving as a convener and resource for the continued expansion of the evidence-base of tobacco control.
- Providing technical assistance, as requested, for developing impact statements and publishing selected statements on the CDC/OSH website as appropriate.
- Providing technical assistance, as requested, on the submission of data to the National Quitline Data Warehouse (NQDW).
- Facilitating development of the evidence base especially in areas of innovative strategies in reaching populations disproportionately impacted by tobacco use and dependence and associated disease, disability, and death through tobacco use and dependence treatment initiatives.
- Collecting and analyzing data that can be used to monitor and evaluate tobacco use and dependence treatment initiatives.
- Disseminating the Weekly Dose newsletter containing pertinent information regarding tobacco-related topics and NOFO-related information.
- Providing access to CDC's Office on Smoking and Health Media Campaign Resource Center.
- Collaborating with the Food and Drug Administration to provide information related to regulatory action.
- Providing data visualization training and technical assistance.

- Providing a Tobacco Control Network, Communities of Practice, and tailored webinars that include lessons learned from peers, and opportunities for tailored technical assistance and sustainability planning.
- Providing 12-month on-boarding support for new tobacco control program managers.
- Providing leadership development through the OSH Leadership and Sustainability School for program managers.

Expanded Authority: The recipient is permitted the following expanded authority in the administration of the award.

- Carryover of unobligated balances from one budget period to a subsequent budget period. Unobligated funds may be used for purposes within the scope of the project as originally approved. Recipients will report use, or intended use, of carried over unobligated funds in Section 12 "Remarks" of the annual Federal Financial Report. If the GMO determines that some or all of the unobligated funds are not necessary to complete the project, the GMO may restrict the recipient's authority to automatically carry over unobligated balances in the future, use the balance to reduce or offset CDC funding for a subsequent budget period, or use a combination of these actions.

FUNDING RESTRICTIONS AND LIMITATIONS

Indirect Costs:

Indirect costs are approved based on the negotiated indirect cost rate agreement dated August 14, 2023, which calculates indirect costs as follows, a Provisional is approved at a rate of 17.3% of the base, which includes, direct salaries and wages including all fringe benefits in Albany (b). The effective dates of this indirect cost rate are from 04/01/2023 - 03/31/2026.

Missing Contractual Elements - The TBD contractor cost noted in the budget narrative are not approved and the recipient may not begin the contract until the six elements in accordance with the CDC Budget Preparation Guidance, are provided via GrantSolutions as a Notice of Contractor Amendment and GMO approval is provided via Notice of Award.

- BTC facilitation contractor (Comp 1 contractor# 4 - \$30,000)

PAYMENT INFORMATION

Payment Management System Subaccount: Funds awarded in support of approved activities have been obligated in a subaccount in the PMS, herein identified as the "P Account". Funds must be used in support of approved activities in the NOFO and the approved application.

The grant document number identified beginning on the bottom of Page 2 of the Notice of Award must be known in order to draw down funds.

CLOSEOUT REQUIREMENTS

Standard closeout reporting requirements are identified in the General Terms and Conditions, which are published on the CDC website at <https://www.cdc.gov/grants/federal-regulations-policies/index.html>.

Final Performance Progress and Evaluation Report: This report should include the information specified in the NOFO and is submitted 120 days following the end of the period of

performance via www.grantsolutions.gov. At a minimum, the report will include the following:

- Statement of progress made toward the achievement of originally stated aims.
- Description of results (positive or negative) considered significant.
- List of publications resulting from the project, with plans, if any, for further publication.

Additional guidance may be provided by the GMS and found at:

<https://www.cdc.gov/grants/already-have-grant/index.html>.

Exhibit F

[Help?](#) [Register](#) [Log In](#)

Media Campaign Resource Center (MCRC)

We are currently unable to process orders at this time.



About MCRC

Educate audiences about the harmful effects of commercial tobacco use with the MCRC, your source for free and low-cost tobacco education campaign materials. This collection is available to the tobacco control community and partners to support your communications efforts. You can type in a keyword to start your search or use the section links to find ads for your campaign.

Featured Ads & Campaigns



Fred W. Fishing Tip



You Are the Target



Felicita R., Déjelo Tip



Tammy W., Everyone Can See It Tip



Take the First Step

Additional Featured Content



Empower Vape-Free Youth



State & Community Health Media Ctr



Health Communications User Guide



Visit the Tips From Former Smokers Website



Ads in Cycle Big savings! Check out our collection of advertisements in cycle (initial fees are paid). [Learn more ▶](#)



Free Ads Take a look at campaign materials which are free to use



New Ads Browse the newest submissions to the MCRC!